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# USSR Report

AGRICULTURE

No. 1399

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### REVIEW OF CROP PROGRESS, CONDITIONS IN THE UKRAINE

Kiev SIL'S'KI VISTI in Ukrainian 19 May 83 p 1

[Text] After examining the course of spring field work, the UkSSR Ministry of Agriculture noted that on most of the republic's farms spring crops and potatoes were sown well and on time thanks to highly productive use of technology, broad application of the brigade contract and team work with the job contract plus bonus system of payment for final results.

Now it is important to take good care of crops. The whole work complex should be directed toward moisture preservation, weed destruction, the protection of plants from pests and diseases and top dressing.

The republic's corn fields need special attention. This year they occupy almost 5 million hectares including more than 2.3 million hectares of corn for grain. The main corn fields for grain are in rayons with insufficient moisture. Here soil moisture reserves in the meter layer of soil are considerably smaller than the average. Therefore, the worker's chief task is to struggle for moisture throughout the whole plant vegetation period. There will be less moisture loss on dry lands if optimal plant density is established early, if fields are free of weeds and the soil is well loosened.

Plant density in each oblast is determined by taking into account many years' data from scientific research institutions, soil moisture, nutrients and hybrid biological specifics. Under present conditions in the steppe zone attention should be given to the lower indices of scientist recommended density.

There should be a more effective struggle to combat weeds and especially pink sow-thistles. Corn should be worked with herbicides 2.4-D in the three to five leaf phase.

This spring the republic's farms sowed sunflower 2 weeks earlier. Now they are taking good care of the crops. Exemplary work is done by the Kolkhoz imeni 22 Party Congress, Tel'manivskiy Rayon, Kolkhoz "Bat'kivshchyna" in Pervomayskiy Rayon, Donetsk Oblast, Kolkhoz imeni Posmitnyy in Berezovskiy Rayon, Odessa Oblast and others who were winners in the all-union and republic socialist competition to fulfill plans for the production and sale of oil crop seed to the state in 1982.

Sunflowers are well taken care of by the mechanized team headed by Yu. I. Yer'omenko from "Dnipro" kolkhoz in Novovorontsovskiy Rayon in Kherson Oblast. Machine operators harrowed crops over a 254 hectare area, loosened interrows, forming optimal plant density.

In heavy soils and also in those subject to flooding, where herbicides did not completely destroy weeds, corn and sunflower interrows are, as a rule, loosened to a depth of 5-6 cm.

Because a considerable amount of corn, sunflower and other crops are raised according to ordinary technology, creative application should be made of appropriate crop care measures.

It is not worthwhile to loosen interrows with chisels. These working parts are two to three times less successful in destroying weeds than central shovels and going deeper into the soil brings up soil from lower layers, creating clods and furrows.

In beet plantations sown in the first ten days of April plants are developing well showing two to four pairs of leaves. Plant density is almost established. Now the workers are tilling interrows and are top dressing crops with mineral and organic fertilizer. An appropriate level in this work is maintained by rayons in Vinnitsa, Ternopol, Volyn, Ivano-Frankovsk and Chernovtsy Oblasts where plant density has been established over 67-93 percent of the area.

But there are also other factors. Considerable delays in forming plant density are evident in a number of rayons and farms in Nikolayev, Odessa, Kirovograd, Dnepropetrovsk and some other oblasts of the republic. At the Kolkhoz imeni 20th Party Congress and the Kolkhoz "Partyzans'ka Iskra" in Pervomayskiy Rayon, Nikolayev Oblast almost all plantations are overgrown with rape, sow-thistles, green foxtails and goose-foot. Beets at Kolkhoz imeni Kuybyshev in Lyubashevskiy Rayon and Kolkhoz "Svitla Put'", Ananyevskiy Rayon in Odessa area are also becoming weed infested.

At kolkhozes imeni Kotovskiy, imeni Shchors, imeni Gorkiy in Novomoskovskiy Rayon, Dnepropetrovsk Oblast crops were only harrowed once prior to sprout appearance and there was no harrowing after sprouts appeared. Most farms were ten or more days late in establishing plant density. Because of weeding delays in some areas beets are crowded out in thickened rows.

Beet sowing farm managers and specialists have the following tasks: to organize two-shift use of thinners and cultivators. All individuals able to work must be mobilized and appropriate living conditions for workers must be created; plant density must be established as soon as possible, crops must be top dressed and weeds destroyed.

Potato crop care has started on most farms of the republic. Success has been achieved in Chernovtsy, Volyn, Rovno and Lvov Oblasts. However, in Cherkassy, Kirovograd, Kharkov, Vinnitsa, Sumy and some other oblasts there are delays in tilling. On farms in Slavutskiy and Izyaslavskiy Rayons, Khmel'nitskoy Oblast at the time of control only 7-16 percent of potato areas were loosened.

Weather conditions even promoted the appearance of sprouts in vegetable crops and tomato planting. Yet in Vinnitsa, Poltava, Kiev and Transcarpathian oblasts some farms are missing optimal dates for planting tomatoes.

The Ministry Collegium instructed local agricultural organs to use time-limiting measures to remove and avoid episodes of unsatisfactory crop care work organization, to fulfill all agricultural measures on time and well.

9443

CSO: 1811/42



## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BRIEFS

HIGH SPEED SOWING--Taldy-Kurgan--The battle with the desert and the hot air that could have dried out the fields before the seeds were placed in the soil was won by the farmers of Semirech'ye. They completed the planting of sugar beets, for the first time having expended less than 100 working hours on this. The councils of the rayon agro-industrial association played a decisive role. They directed the farms and their coworkers--the subdivisions of Goskomsel'khoztekhnika and the Sel'khozkhimiya association--toward better retention of the soil moisture. They provided for group utilization of planting equipment on two shifts everywhere. An example of high organization was provided by the sugar beet growers of the Alakul'skaya valley who were the first in the oblast to complete the changeover to cultivation of the planted areas according to the collective contract method. Sugar beet growing is developing on an industrial base in the oblast. More than 100 unregulated links have set as their goal to raise no less than 400-500 quintals of sugar beets per hectare. [Text] /Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 13 Apr 83 p 1/ 11772

SUGAR BEETS--An important business discussion concerning increasing the productivity and the sugar content in beets was held at the republic conference of sugar beet growers. Now it is important to fully implement the recommendations that were made by scientists and leading production workers. It is necessary to check once again on their distribution among the fields, the staffing of the teams and their provision with fertilizers and herbicides. It is important to do all work on the planted areas at the optimal time periods. Here one can neither be late nor too hasty. As everywhere, here the success of the matter is decided by people. The main thing is not only to teach, but also to convince the machine operators, managers and specialists of farms, everyone who is directly or indirectly participating in the raising of sugar beets, that our land can and should produce high and stable yields of sweet roots, that every sugar beet grower should reach the goals of the leading workers. [Excerpt] /Alma-Ata PARTIYNAYA ZHIZN' KAZAKHSTANA in Russian No 3, March 83 pp 29-30/ [COPYRIGHT: "Partiynaya zhizn'Kazakhstana", 1983] 11772

SUGAR BEET PLANTING--Competing for a worthy greeting for 1 May, the farmers of the republic have completed the planting of sugar beets. On all of the more than 71,000 hectares they have been planted at the best agro-technical time periods and with good quality. There are vigorous shoots on many of the areas. The sugar beet growers are striving to sell the state 2.24 million tons of sweet roots. On most of the areas in Dzhambul, Taldy-Kurgan and Alma-Ata



oblasts they have been planted after the best predecessors. The soil was treated with organic and mineral fertilizers. Moisture retention irrigations were conducted on many fields before planting. Industrial technology for cultivating the crop on almost one-third of the area and the collective contract will contribute to the struggle for a maximum return from the planted areas. Hundreds of teams on specialized farms have changed over to the collective contract this year. [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 20 Apr 83 p 1] 11772

COMPLETED SUGAR BEET PLANTING--Taldy-Kurgan--The farmers of the Kazakhstan Semirech'ye have completed the planting of sugar beets, having expended less than 100 working hours on this for the first time. The councils of the rayon agro-industrial association played a decisive role here. They provided for group utilization of planting equipment on two shifts. An example of high organization was provided by the sugar beet growers of the Alakul'skaya valley who were the first in the oblast to begin to work according to the collective contract method. [Text] [Moscow IZVESTIYA in Russian 15 Apr 83 p 1] 11772

DZHAMBUL SUGAR BEETS--The planting of sugar beets has been completed by the farmers of Dzhambul Oblast. The changeover to industrial technology for cultivating this valuable crop everywhere contributed to a considerable degree to laying the basis for high yields at optimal times. [Text] [EKONOMICHESKAYA GAZETA in Russian No 17, Apr 83 p 4] 11772

REPEATED SUCCESS--Taldy-Kurgan Oblast--Sugar beets are the pride of Semirech'ye. This year they have been planted on 32,700 hectares in the oblast. In response to the appeal of participants in the republic conference of sugar beet growers and workers of sugar refineries, the Taldy-Kurgan workers have taken on difficult commitments: to harvest 1 million tons of sweet roots this year--5,000 more than planned. All sugar beet rayons have obtained shoots that are considerably better than last year's. The fact that the machine operators conducted planting on land that was plowed in the autumn and had already been carefully leveled for the most part helped. They used seeders with precision planting. The elements, true, brought surprises--the sandy hurricanes swept away the plantings on 1,100 hectares. In the Alakul'skaya and Karatal'skaya valleys the areas had to be replanted. Mass thinning of the shoots and the formation of rows are now in progress. The work was well organized on the planted areas of Karatal'skiy, Alakul'skiy and Taldy-Kurganskiy Rayons. But the Sarkand workers are way behind. Workers of the Semirech'ye area should obtain no less than 300 quintals of beets from each hectare. These goals were reached in 1981. Now the workers of the plantations are doing everything to repeat their success. [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 13 May 83 p 2] 11772

SUGAR BEET CARE--The majority of farms this year have conducted the thinning and weeding of the sugar beets with better organization and more promptly this year, which has made it possible to distribute the plants well among the areas of nutrition. But, unfortunately, subsequent interrow cultivation is not being conducted promptly everywhere. Sugar beet growers have been slow in doing this in Iliyskiy Rayon in Alma-Ata Oblast, in Dzhambul'skiy and Kurdayskiy Rayons in Dzhambul Oblast, and Alakul'skiy and Sarkandskiy Rayons in Taldy-Kurgan Oblasts.

They have not yet completed the first loosening and they are late in topdressing the planted areas. /Excerpt/ /Alma-Ata KAZAKHSTANSKAYÁ PRAVDA in Russian No 7, 22 June 83 p 1/ 11772

11772

CSO: 1824/457

APPLICATION OF TECHNOLOGY FOR INCREASED, IMPROVED FEED PRODUCTION

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 6, Jun 83 pp 45-48

[Article by M.A. Smurygin, corresponding-member of VASKhNIL at All-Union Order of Red Banner of Labor Scientific-Research Institute of Fodder imeni V.R. Vil'yams: "The Feed Base -- An Important Element of the USSR Food Program"]

[Text] During the current decade, the principal increase in livestock products will be achieved mainly by increasing the productivity of the animals. This advances into the foreground the task of raising the level and full-value of their feeding. Large-scale capital investments are being allocated for the development of animal husbandry during the 11th and 12th Five-Year Plans. In the process, a change is taking place in the manner of their use. Compared to the previous decade when a large portion of the capital investments was used for the construction of livestock complexes, they are now to be used, as set forth in the USSR Food Program, for creating a stable feed base for animal husbandry and also for the modernization and expansion of livestock facilities.

Since during this modern stage in agricultural development, one restraining factor with regard to increasing the production of animal husbandry products is the feed shortage, the USSR Food Program has called for the production of feed to be increased to 500 billion feed units by 1985 and to 540-550 billion feed units by 1990. In order to appreciate better the scale of this task, it is sufficient to cite only two figures. During the current decade it will be necessary to increase feed production by 140-150 billion feed units, whereas during the preceding 10 years the increase amounted to 70 billion. This means that the rates of growth for feed production during the 11th and 12th Five-Year Plans must be doubled. Compared to the 10th Five-Year Plan, the average annual production of feed during the 11th Five-Year Plan must be increased by 26 percent and during the 12th -- by 38 percent.

In order to satisfy completely the animal husbandry requirements for concentrated feeds during the 11th Five-Year Plan, their production must be increased by 26 percent, with the proportion of mixed feed in these concentrated feeds being increased accordingly by 60 percent.

Growth in the production of feed will be achieved by improving the structure and raising the yields for forage crops, by carrying out land reclamation work on natural feed lands, through the more extensive use of fertilizers and

herbicides and through the introduction into operations of progressive technologies for the procurement and storage of feed based upon all-round mechanization.

The logistical base for feed production will be improved substantially. The plans call for agriculture to be supplied annually with approximately 40,000 feed harvesting combines and also other machines required for the complete mechanization of production and to place in operation silage and haylage installations for an overall capacity of 240-245 million cubic meters, hay storehouses for 60-65 million tons and root crop storehouses -- for 30-35 million tons.

A system of large-scale organizational-economic measures will be implemented for the purpose of creating a specialized sector of feed production.

At the present time, the principal source for increasing the production of grain forage and coarse, succulent and other types of feed is that of field lands, which supply approximately 75 percent of their overall production. The plans call for 1.05 billion tons of fodder (164 billion feed units) to be obtained from field lands in 1985 and for the increase in feed production (excluding grain forage) on them to be raised to 50 billion feed units. In order to achieve this, it will be necessary to raise the yield of the plants from 2,100 to 3,300 feed units per hectare. In addition to improvements in the structure of the areas under crops, the introduction of specialized feed crop rotation plans and progressive industrial technologies for the cultivation of forage crops, an expansion in the areas of intermediate sowings and more efficient use of reclaimed and irrigated lands are decisive factors for increasing the productivity of forage crops.

Improvements in the structure of the feed lands call first of all for an increase in the sowings of perennial grasses from 25.6 to 27.5 million hectares and a reduction in the annual grass areas from 17.2 to 11.6 million hectares. In the sowing structure for perennial grasses, leguminous grasses (alfalfa and clover) in pure form and in mixtures must constitute 76.6 percent compared to 59.3 percent at the present time. The introduction into the sowing structure for annual grasses of multiple-component mixtures with leguminous grasses will make it possible to obtain up to 170 quintals of fodder per hectare, with a feed unit containing 120-140 grams of digestible protein.

As a result of an increase in the specific structure of corn -- an expansion in the sowings of early and medium-early hybrids and varieties and also the use of an industrial technology for cultivating it -- the fodder yield is expected to increase by 29 percent compared to its production level during the 10th Five-Year Plan.

The increasing logistical level for feed production will make it possible during the 11th and 12th Five-Year Plans to expand the use of industrial technologies for the cultivation of a majority of the forage crops. This is especially important with regard to perennial grasses, the cultivation technology for which can ensure multiple-cutting usage (3-4 cuttings). In regions of adequate moisture and with irrigation, this method can make it possible to increase the nutrient yield per hectare of sowing of perennial grasses by 25-30 percent.

The introduction of an industrial technology for the entire area on which food roots are cultivated will make it possible to raise their yield to 400-600 quintals per hectare or higher and to lower the production cost per feed unit by a factor of 1.5.

In increasing the forage crop yields on arable land, great importance is attached to the level of use of chemical processes. The results of studies have shown that, on the average for the country as a whole, 1 ton of mineral fertilizer (in standard mineral fertilizers) furnishes 2,500-3,000 additional feed units and under irrigation conditions -- 4,500-5,000 additional feed units. Thus in the future, for each hectare of forage crop sowing, no less than 200 kilograms of active mineral fertilizer agent should be applied. In this instance, the overall requirement will be 11.3 million tons of active agent, including roughly 2 million tons of active agent in livestock runoff, which can fertilize approximately 4 million hectares of corn and 0.5 million hectares of food roots grown in farm crop rotation plans.

For the efficient use of irrigated lands and for obtaining approximately 6,000-6,500 feed units from each hectare, no less than 10-12 quintals of mineral fertilizer should be applied per hectare. In this instance, the irrigated lands can supply approximately 63 billion feed units annually, or more than 25 percent of the overall production of feed from arable lands.

In regions of adequate moisture and on irrigated areas in other zones, the use of intermediate sowings is making it possible to obtain 2-3 yields annually from the same area and to increase the production of feed per hectare in the nonchernozem zone by 25-30 percent and in the southern regions of the country -- up to 50 percent. In this regard, by 1985 the area of intermediate sowings of forage crops should ideally be increased to 6.5 million hectares, including under irrigation -- up to 980,000 hectares.

An intensification of feed production operations on field lands requires the introduction of feed crop rotation plans in all areas as a decisive factor for intra-farm specialization in feed production.

Studies and the experience of leading farms have revealed that the introduction of feed crop rotation plans, an increase in them in the proportion of highly productive forage crops (up to 70 percent) and the use of progressive technologies for cultivating them serve to raise the productivity of a hectare of arable land to 5,000 feed units. The overall feed yield from feed crop rotation plans can reach 150 billion feed units, or more than 60 percent of the overall feed production from field lands.

With the skilful use of improved means and methods for protecting plants and the use of new, more effective and less toxic to man and animals chemical and biological agents, it should be possible to increase feed production by another 13-14 percent.

A most important reserve for increasing feed production and one which by no means has been utilized completely as yet is that of the natural feed lands. Scientific studies and extensive experience have shown that feed production from these lands, as a result of implementing improvements in them, can be increased in the future by a factor of 1.5-2.



At the present time, the harvesting of feed from these fields is not in keeping with their potential. In the future, the area of improved haying and pasture land must be increased to 100 million hectares and their productivity raised considerably.

A most important factor for optimizing the production of feed is the use of new varieties of the intensive type. The introduction of such varieties of perennial grasses alone, on an area of 10 million hectares, will make it possible to obtain approximately 5-6 billion additional feed units. Experience and practical work has shown that when cultivated under normal moisture conditions and with use being made of good agricultural practices, the following level of productivity can be achieved for dry bulk: meadow clover and alfalfa 130-140 quintals per hectare, perennial cereal grasses 110-130 quintals per hectare and alfalfa under irrigation in the steppe zone of the country -- 230-250 quintals per hectare and in the republics of Central Asia -- 350-380 quintals per hectare.

However, a radical change is required in the system of seed production when introducing intensive varieties of forage crops into production operations. The work concerned with further specialization and concentration in the organization of seed production on an industrial basis, in zones having more favorable soil-climatic conditions for their cultivation, should be continued.

A most important condition for scientific-technical progress in the branch during the 11th and 12th Five-Year Plans and for implementing the Food Program will be the complete mechanization of feed production and the use of progressive technologies for the procurement and storage of feed.

At the present time, owing to failure to observe the harvesting schedules, violations of the existing feed procurement technologies and weak introduction of new ones and also poor feed storage, a considerable quantity of feed units is being lost annually throughout the country. Hence, during the 1978-1980 period, the overall yield of feed (in feed units) amounted to an average of only 57 percent.

A solution for the problem of complete mechanization of feed production will make it possible to increase the procurements of hay and other feed using progressive technologies even during the 11th Five-Year Plan. The obtaining of hay by means of forced ventilation drying will increase from 2.7 million tons in 1976 to 9.6 million tons in 1985 and the pressing of hay -- from 19.2 to 35 million tons. This will increase and improve its quality noticeably. For example, the nutritional value of the hay will be raised by 8-12 percent.

The technology for haylage making can produce substantial growth in the production and improvements in the quality of feed obtained from perennial grasses. It differs from other preservation methods in that it makes it possible to harvest grasses during the optimum phases of their development and to obtain feed having a nutritional value of 0.4-0.45 feed units in 1 kilogram and with a protein content of 120-140 grams per feed unit. The multiple-cutting use of perennial grasses, when procuring haylage, increases the yield of feed units to 30 percent and digestible protein by a factor of 1.5. Thus by 1990 the haylage procurement volumes will increase considerably.



Improvements in the quality of the plant raw materials, as a result of the cultivation of early ripening corn hybrids and ensiling it during the phase of waxy and milk-waxy ripeness of the grain, will increase the yield of feed by 2.9 billion feed units in 1985. The silage procurement volumes will increase with the use of chemical preservatives. This will make it possible to obtain silage from all types of grasses, to retain up to 92 percent of the nutrients and up to 95 percent of the sugar and to obtain 1.6-1.8 rubles of profit for each ruble expended.

During the 11th Five-Year Plan and in the future, the plans call for a reduction in feed losses during storage. As a result of the construction of installations for the one-time storage of 60-65 million tons of hay alone, the losses in this feed caused by anther mould and rot will decrease by 8.5 to 9.0 million tons. The placing of silage bulk in storage in substantial silage storehouses (245 million cubic meters or 81 percent of the requirements) and covering it with polymer film will raise the preservation of the feed from 61.8 percent during the 1976-1980 period to 80 percent by 1990. As a result of improving the preservation of the feed during ensiling, haylage making and the storage of hay, its yield by the end of the current five-year plan will be increased by 8.7 billion feed units.

In the complex solving of the vital problems associated with modern feed production, considerable importance is attached to the questions concerned with accelerating in every possible way the tempo of scientific studies and the introduction of new developments into kolkhoz and sovkhoz practice, through concentration and more efficient use of the country's existing scientific potential.

According to computations by VNIK [All-Union Scientific Research Institute of Fodder], the introduction of presently available new developments into feed production operations, in the volumes recommended by the scientific institutes, will make it possible to obtain additionally not less than 135 billion feed units on feed lands and 85 billion feed units on haying and pasture lands.

At the same time, the degree of completion of many scientific-technical developments for feed production, carried out during the 10th Five-Year Plan, and especially the scales and rates for their practical use still do not conform fully to the tasks for the accelerated development of animal husbandry. Taking this fact into account, a special purpose all-round scientific-technical program was developed for feed production for the 1981-1985 period. Its fulfillment involved the participation of 167 zonal and republic institutes, experimental stations, higher educational institutes, specialized institutes and the plants of 30 different ministries and departments. The All-Union Order of the Red Banner of Labor Scientific-Research Institute of Fodder imeni V.K. Vil'yams was established as the leading organization. The introduction into production operations of new developments in the volumes called for in the special program for feed production will make it possible, by 1985, to increase the feed yield by no less than a factor of 1.5 and to raise it to 500-520 billion feed units.

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## LIVESTOCK

### UZBEK DAIRY INDUSTRY ANALYZED

#### Lagging Productivity of Complexes

Tashkent *EKONOMIKA I ZHIZN'* in Russian No 5, May 83 pp 59-60

[Article by V. Shalimov, department head at Uzbek Scientific Research Institute of Animal Husbandry: "Some Problems Concerned With the Work of Dairy Complexes"]

[Text] An extremely important and complicated task is that of raising the production efficiency for animal husbandry products. The May (1982) Plenum of the CPSU Central Committee defined the principal trends for developing this branch in the future. A great amount of attention is given in these trends to increasing the production of milk.

At the present time, there are 174 state and kolkhoz livestock complexes and dairy farms in operation throughout the republic, with 86,500 cows being maintained at these facilities. By the end of 1985, the plans call for the number of complexes and farms to be raised to 302 and for the number of cattle to be increased to 153,000. In addition, the plans call for the number of livestock complexes for the raising of 280,500 non-calving young cows to be increased to 90.

A great amount of work is already being carried out throughout the republic in connection with the intensification of animal husbandry and converting it over to an industrial basis. The logistical base is being created for the guaranteed production of milk in the volumes required for the population. However, notwithstanding the tremendous efforts and resources being expended, the modern dairy complexes continue to remain unprofitable and inefficient. At these facilities the productivity of the cows is increasing very slowly, the offspring rate is low and feed expenditures per unit of final product are excessively high. The production costs for milk at various categories of farms exceed the planned indicators by 1.5-6.5 rubles. In this regard, the profitability of the dairy complexes over the past 2 years has amounted to approximately 15 percent.

In studying the causes of the situation that has developed in dairy animal husbandry, it became clear that one of the chief factors is the disparity between the capabilities newly placed in operation and the livestock maintenance technology: at the new livestock complexes, use is being made of

an obsolete technology wherein cows are assigned to an individual milkmaid; this is restraining technical progress in animal husbandry and it is holding back its conversion over to a flow line-departmental system for milk production and reproduction of the herd.

A serious cause of the lag that has developed in the branch is the under-manning of the marketable milk farms and complexes in terms of animals. In some areas it does not exceed 20 percent. This phenomenon is particularly unacceptable in view of the fact that the cost for one cattle billet at the new complexes exceeds by a factor of 4-5 the cost at former livestock farms and now amounts to 2,400-2,700 rubles.

Definite harm is being caused by the practice of kolkhozes and sovkhoses procuring and importing low productivity cattle from other regions of the country for the purpose of forming and replacing the herd at dairy complexes. Moreover, the cattle so procured are not always suitable for maintenance on an industrial basis. Our internal resources for reproducing a herd having a guaranteed dairy productivity and suitable for maintenance on a mechanized basis are extremely limited. Within the republic there are only 4,000-5,000 such animals, whereas the requirement for them is much greater -- 140,000-170,000 head.

We analyzed the relationship between livestock breeding and its productivity against the economic operational efficiency of dairy complexes and the return from newly introduced livestock installations at three of the republic's farms: the Madaniyat Kolkhoz in Bukharskiy Rayon, Bol'shevik Kolkhoz in Bagdatskiy Rayon and the Sovkhoz imeni 60-Letiya Komsomol in Markhamatskiy Rayon. The computations revealed that with a reduction in the milk yields from 4,500 to 2,800 kilograms, all of the inputs for production cost per unit of output are raised by a factor of 1.5-1.7. For a cow productivity of 4,000 kilograms during lactation and a production cost per quintal of milk of 18 rubles, the net income from the sale of milk is 544 rubles per cow annually (upon the condition that the milk is sold as being of 1st grade quality). In such a case, the capital investments for the construction of a livestock complex are reimbursed within a period of 4.5 years.

A completely different picture is observed when the cow productivity during lactation is 3,000 kilograms. Here the production cost for 1 quintal of milk is raised to 25.6 ruble and the net income decreases to 180 rubles per cow annually. (The procurement price for 1st quality milk is 31.6 rubles per quintal). Here the reimbursement periods for capital investments for the construction of livestock complexes are lengthened to an excessive degree (up to 13 years).

In the construction of modern livestock complexes and in the interest of achieving normal reimbursement, cows having a milk productivity of no lower than 3,200 kilograms during lactation must be maintained at the complexes involved.

A conclusion comes to mind -- can the construction of costly dairy complexes in Uzbekistan be considered justified? Their high capital-output ratio raises sharply the production costs for the product and at the same time it lowers

the operational efficiency of the complex. Experiments which we carried out at the Besharyk Sovkhoz in Kirovskiy Rayon and at the Bol'shevik and Pakhtakor Kolkhozes in Bagdatskiy Rayon in Fergana Oblast revealed that the construction of costly complexes in Uzbekistan is not necessary.

Another conclusion comes to mind. Greater advantage is to be gained through a well thought out modernization of existing livestock facilities, the proper placement of production departments and the use of a flow line-departmental technology for maintaining the livestock. This will make it possible to reduce the capital-output ratio compared to that for newly introduced complexes by a factor of 4-5.

Another factor must be taken into account. The availability of high-yield cows, sufficient in number for meeting the requirements of the production capabilities, must serve as the criterion for the construction of a modern and highly mechanized dairy complex. But since it is not possible to find such a number of highly productive animals in all areas, the construction of a new and highly mechanized complex can hardly be considered advisable. Instead, greater advantage is to be gained from the modernization of the capabilities of existing farms and devoting greater attention to the livestock maintenance technology.

An important condition for converting dairy cattle husbandry over to an industrial basis is that of improving the wage system for workers attached to livestock farms and complexes and especially a new category of such workers -- operators. Such improvements must be coordinated with growth in the production volumes and with raising the efficiency and quality of labor, that is, with the final results of labor and output production.

The solving of all of these problems will undoubtedly facilitate implementation of the instructions handed down by the party for converting animal husbandry over to an industrial basis and increasing the production of its products, particularly milk.

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#### Labor Costs, Organization

Tashkent *Ekonomika i zhizn'* in Russian No 5, May 83 p 61

[Article by T. Mailabayev, candidate of economic sciences and head of an economics laboratory at the Uzbek Scientific Research Institute of Animal Husbandry: "Reserves of Dairy Animal Husbandry"]

[Text] If the labor expenditures in animal husbandry for the production of 1 quintal of milk or for an increase in the live weight of large-horned cattle were to be lowered by just 1 man-hour, then this factor alone would enable the kolkhozes and sovkhoses of the Ministry of Agriculture for the Uzbek SSR to realize a savings of more than 8 million man-hours of working time and it would release more than 2,700 workers for other work on the farms. Such reserves are available throughout the republic.

Studies which we carried out have shown that labor expenditures for the production of a unit of livestock output are less by a factor of 2.8-3.1 at leading farms than the average for farms of this category of the Ministry of



Agriculture for the Uzbek SSR. This indicator differs more markedly among individual farms. For example, at the Krasnyy Vodopad Experimental Animal Husbandry Base of UzNIIZh /Uzbek Scientific Research Institute of Animal Husbandry/ the production of 1 quintal of milk requires 3.2 man-hours of work and an increase of 1 quintal of meat in large-horned cattle -- 20.5 man-hours, whereas at sovkhoses throughout the republic the average figures for such production are 10 and 66.3 man-hours respectively.

The above is being observed not only among rank and file farms and the scientific-experimental base, which can be viewed as a completely natural phenomenon, but also among farms which for all practical purposes operate under the same natural-climatic conditions. At the present time, on large-horned cattle farms of the sovkhoses Chinaz in Tashkent, Malik in Syr-Darya and imeni Lenin in Namangan Oblasts the production of 1 quintal of milk requires 4.7, 3.7 and 5.2 man-hours of work respectively, that is, less by a factor of 2.5 than that required on the farms of many other establishments. Leading workers confirm the availability of great reserves for lowering labor intensiveness and it follows, the production costs for animal husbandry products throughout the republic.

The more complete utilization of these reserves is associated directly with improving the organization of production and labor, introducing new techniques and technologies, making better use of man-power on the farms and at complexes, raising the productivity of the livestock and employing production concentration and specialization. Here it is appropriate to cite one particular indicator. Whereas at leading sovkhoses of animal husbandry farms where large-horned cattle are being maintained we have a level of mechanization on the order of 85 percent, the average for farms of sovkhoses of the republic's Ministry of Agriculture is only 41.5 percent.

We studied the relationship between the level of mechanization and the labor intensiveness for the production of animal husbandry products at 184 sovkhoses of this ministry. It was discovered that at sovkhoses of the first group, where the average level of mechanization for cattle husbandry is only 16 percent, 275 man-hours were expended during a year's time for the servicing of one head of large-horned cattle, cows -- 457 man-hours, for obtaining 1 quintal of milk -- 23.1 and 1 quintal of weight increase in the animals -- 145.5 man-hours.

As the level of mechanization at the farms and complexes increases, the labor intensiveness of production operations at them decreases. At sovkhoses of the fourth group, where the level of mechanization at livestock farms and complexes is the highest, the labor expenditures for servicing cattle and for producing a unit of animal husbandry product are 10/21 to 10/39 less than those at sovkhoses of the first group. A substantial difference is observed between them in terms of wages. Compared to sovkhoses of the fourth group, where wages constitute only 18.2 percent of the overall production expenditures, at sovkhoses of the first group -- 32.5 percent.

A high level of mechanization also lowers the operational expenditures per head of large-horned cattle and per unit of product produced. They are substantially lower at sovkhoses of the fourth group than at sovkhoses of the first group.

There is one indisputable fact: an improvement in labor organization plays a great role in lowering labor intensiveness in the production of animal husbandry products. Our time-study observations have shown that at the present time milkmaids, cow tenders and calfmajds are utilizing only 76-80 percent of their working time in behalf of the principal task; for various reasons, the remaining time is spent in an unproductive manner. These losses can be avoided if the labor of the workers at the complexes and farms is organized in the proper manner, if they are given realistic work assignments, if appropriate work and recreation regimes are established for them, if the working positions are equipped with mechanized equipment and if constant and reliable technical servicing is organized in behalf of the production operations. None of this work requires special additional expenditures and yet a high return can be realized from it.

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## INCREASING URAL AREA MILK YIELDS

Sverdlovsk URAL'SKIYE NIVY in Russian No 3, Mar 83 pp 45-46

[Article by Ye. Arzumanyan, doctor of agricultural sciences, professor and department head at Timiryazev Agricultural Academy: "Important Reserves for Milk Production"]

[Text] The Urals zone may occupy a leading position in the country with regard to the intensive management of dairy cattle husbandry. Notwithstanding severe climatic factors, the rich natural conditions found here serve as a guarantee for a strong feed base, one which will fully satisfy the livestock requirements for diverse high quality feeds. Rich experience has been accumulated throughout the region in the efficient management of animal husbandry.

Two dairy strains -- black variegated and Tagil -- in addition to others, are capable of supplying the required quantities of milk and meat. According to their inherited milk productivity, cows of the Urals black variegated strain produce milk yields on the average of 4,500-5,000 kilograms of milk. However, the milk yield per cow is on the order of only 60-70 percent of that which is possible.

I would like to discuss the reserves which are available for increasing milk production in the Urals.

The brood stock of the present pedigree structure and inherited potential is capable of furnishing one and a half to two times more milk per cow and in terms of gross milk production -- up to 6-8 million tons (instead of 4).

Naturally, a strong feed base and good feeding, maintenance, milking technology and so forth are required in order to obtain such productivity. A great deal is known regarding feeding and maintenance and thus I will discuss those factors which are beyond the view of the specialists.

First, allow me to mention the mammary gland. The protection of all quarters of a cow's udder is an important task. Although all of the parts constitute a single organ, nevertheless they function rather independently. For example, if one broke down for one reason or another, a second unit would not assume its function. It is correct to estimate that each quarter of an udder

synthesizes an average of 23-25 percent of the milk. Hence, if one is sick then one fourth of a cow's milk is not obtained. Unfortunately, no less than 10 percent of the animals have defective udder units.

Two years ago in the Urals, 2 million cows had a minimum of one fourth of an udder that was not in operating condition. Thus, for an average milk yield of 2,054 kilograms of milk from each such cow, 205 kilograms were not being obtained and for all of the cows -- 41,000 tons of milk. In connection with the conversion of cattle over to an industrial maintenance technology, the number of cows having bad udder units is increasing as a result of a noticeable deterioration in the tending and milking conditions. Certainly, there are various reasons for these udder parts not functioning properly, with the main ones being incorrect milking, poor care of the mammary gland and injuries sustained by the udders in the stalls.

Another important problem -- the drying up of the animals. The cows must dry up on a timely basis and in the correct manner. As a rule, the average duration of the dry period for a herd is 60 days, with fluctuations from 40 to 70, it depends upon the yield levels and upon the health and nutritional state of the animals. Such a period is required by a cow in order to rest following lactation, the accumulation of nutrients in the organism, the normal formation of a fetus in the womb and, in particular, following the formation of colostrum.

The lactation period for a cow is 305 days and the dry period -- 60 days. But in any dairy herd a portion of the cows (not less than 15 percent) prematurely, regardless of pregnancy, go dry during the 4th, 5th and 6th months of lactation. This leads to great losses in milk output, to a reduction in the intensive use of a cow and to irrational use of feed. In 1981, approximately 300,000 cows dried up prematurely on farms in the Urals. For an average milk yield of 2,054 kilograms of milk, the losses per cow are 308 kilograms and for all cows for a minimum of 2 months -- 92,000 tons.

Great harm is caused to the branch by inflammation of the udder in cows. The proportion of cows having this illness in a herd is not less than 20 percent. Depending upon the form of the inflammation, the milk yields decrease by a quarter or more. It bears mentioning that of 2 million cows in the Urals during 1981, 400,000 suffered from inflammation of the udder. It is easy to estimate that for an average milk yield of 2,054 kilograms, the loss for one mastitis cow is 400 kilograms annually and for 400,000 cows -- 160,000 tons.

There are various causes of this illness, with the most typical being -- insufficient milking, penetration of the udder by pathogenic microorganisms, numerous injuries, colds and so forth. Thus a campaign against mastitis in milking herds is an important and vital one.

Thus it is apparent that milk losses in the Urals caused by injury to the udder, the cow going dry and mastitis amount to approximately 300,000 tons of milk annually.

A normal state of nourishment for the cows is the foundation for high productivity. For the proper exploitation of the cows, great importance is

attached to preserving their required state of nourishment, especially during the indoor maintenance period. During the lactation period, the cows must be of an average state of nourishment and at the end of the dry period -- higher than average, that is, the body weight should be increased by 30-40 kilograms. During the dry period an animal must be well prepared. However, more often than not the conditions for the animal are less favorable during this period and its state of nourishment declines sharply. For the restoration of each kilogram of body weight, an adult cow expends 8-10 feed units, for example, 240-360 additional feed units must be spent in order to "produce" 30-40 kilograms. This in turn indicates a loss of 480-720 kilograms of milk. Unfortunately, the minimum number of cows having a lower than average state of nourishment -- one quarter of the herd or more.

Thus, if we protect all quarters of a cow's udder, if we learn how to milk the cows correctly, if we prevent the cow from drying up and eliminate mastitis and if we maintain the cows at the required state of nourishment, then each year we should be able to obtain 350-400 additional kilograms of milk from each cow, with the feeding and maintenance conditions remaining the same.

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## AGRO-ECONOMICS AND ORGANIZATION

### EFFICIENT USE OF FUNDS IN RSFSR AGROINDUSTRIAL ENTERPRISES

Moscow FINANSY SSSR in Russian No 6, Jun 83 pp 31-35

/Article/ by I.K. Vyskrebentsev, deputy chief of the Administration for the Financing of Agriculture of the RSFSR Ministry of Finances: "Strengthening Financial Control Over the Use of Funds for the Development of the Agroindustrial Complex"

/Text/ During the May (1984) Plenum of the CPSU Central Committee, emphasis was placed upon the importance of implementing measures aimed at improving in every possible way the use of land, productive capital and material, labor and financial resources, eliminating losses and intensifying the regime for economies and thrift.

Experience has shown that in many instances the rather considerable funds being allocated for agricultural development are being utilized in an inefficient manner and do not always produce the required return. Although the fixed capital of an agricultural nature at many kolkhozes and sovkhozes in the RSFSR increased considerably in 1981 compared to 1977, gross output production nevertheless decreased somewhat. For example, on farms in Lipetsk and Orenburg Oblasts the growth in fixed capital of an agricultural nature during this period amounted to 130.4 and 131.2 percent respectively and the volume of gross output production decreased to 77.2 and 91.1 percent. Similar situations developed on farms in a number of other oblasts, krays and autonomous republics in the Russian Federation owing to unfavorable weather conditions and also to shortcomings in the financial and economic activities of many kolkhozes and sovkhozes.

The agricultural organs in Lipetsk, Orenburg and a number of other oblasts, krays and autonomous republics did not undertake exhaustive measures aimed at strengthening the weak kolkhozes and sovkhozes. During the period under review, their number not only did not decrease but in fact it increased (see Table on following page).

Some backward farms are not adequately supplied with fixed capital or material resources and thus their volumes of land reclamation and production and housing construction work are low. Quite often it is mainly the highly profitable sovkhozes that are adequately supplied with fixed capital. In 1981 the amount of fixed capital available at low-profitability and

unprofitable sovkhoses of the RSFSR Minsel'khoz /Ministry of Agriculture/, per 100 hectares of agricultural land, was 10/17 less than that for highly profitable sovkhoses; during this same period the latter were allocated 1.6 times more capital investments.

Owing to insufficient control being exercised by certain financial organs, the budgetary funds intended for unprofitable and low profitability farms are often allocated by the agricultural organs to economically strong and highly profitable sovkhoses for capital investments. Thus, an inspection carried out during 1982 in 10 autonomous republics, krais and oblasts uncovered more than 11 million rubles worth of illegal expenditures, including 2.5 million rubles in Amur Oblast, 2.6 million in Kamchatka Oblast and 1 million rubles worth in Ulyanovsk Oblast. In accordance with all of the established facts, measures are being undertaken jointly with RSFSR Minsel'khoz to correct these violations.

	Number of Unprofitable Farms			Proportion of Unprofitable Farms, %
	1977	1981	Growth, %	
RSFSR Ministry of Agriculture	11094	16512	49	68.0
In Lipetsk Oblast	232	299	29	88.7
In Oremburg Oblast	248	433	74	76.8

The RSFSR Ministry of Finance and the local financial organs are constantly exercising control over the effectiveness of use of state capital investments allocated for agricultural development. As a rule, this work is carried out jointly with the institutes of the Russian Republic office of USSR Gosbank and the organs of people's control. Inspections have revealed that in many instances the state funds intended for capital investments are being used in an inefficient manner. Mistakes are being tolerated in the formation of plans for capital construction and in the preparation of planning and estimates documentation. Some of the factors which are resulting in a slow return on invested funds include: dispersion of funds among numerous projects, growth in unfinished production, poor quality construction and incomplete development of many farms. As a rule, the financial and bank organs report the shortcomings as they are discovered to the local agricultural, soviet and party organs.

Special attention is being given to controlling the effectiveness of use of those capital investments allocated for the construction of livestock complexes and poultry factories. In 1981 the RSFSR Ministry of Finance, jointly with the Russian Republic office of USSR Gosbank, carried out a check on 20 broiler poultry factories in 12 oblasts, krais and autonomous republics for the purpose of uncovering reserves for raising profitability and accelerating capital investment reimbursement. Substantial shortcomings and improvements affecting fulfillment of the principal technical-economic indicators, as called for in the plan and project, were established. In connection with non-fulfillment of the planned task for weight increases in the poultry and a feed over-expenditure and also other expenditures per unit of output, the profit plan was not fulfilled by 10 factories in the amount of 6.3 million rubles



(20 percent). The return on capital investments at many factories was lower than that planned.

The capabilities of livestock complexes for the production of milk and beef are being developed slowly. In particular, very poor use is being made of the milk production capability of complexes in the Maritime Kray and in Astrakhan, Vladimir, Orenburg, Tambov, Tula and Orel Oblasts. The leaders and specialists of kolkhozes, sovkhozes and agricultural organs displayed a low degree of responsibility for the slow development of a guaranteed feed base, for ensuring that the livestock complexes were provided with support in the form of machines, equipment and highly productive young livestock, for the availability of skilled personnel and for the absence of normal production and domestic conditions.

In a number of areas the construction organizations of RSFSR Minsel'stroy /Ministry of Rural Construction/ erected poor quality complexes and placed projects in operation which were marked by serious imperfections, as a result of which the development of the planned capabilities was delayed. The RSFSR Ministry of Land Reclamation and Water Resources, Glavnechernozemvodstroy and their local organs are from year to year failing to fulfill the plans for land reclamation construction and the quality of the land reclamation work being carried out on meadows is low. RSFSR Goskomsel'khoztekhnika has not ensured the acceptance of all of the livestock complexes for complete technical servicing by its subordinate enterprises and, as a result, there has been considerable mechanism and equipment idle time.

Considerable losses in output have occurred at some livestock complexes owing to frequent non-planned shutdowns in the supply of electric power. Many enterprises and organizations of RSFSR Minzag /Ministry of Procurements/ have not ensured the delivery of adequate quantities of high quality mixed feeds in the required assortment.

Considerable harm is being inflicted upon the kolkhoz and sovkhoz economies by the systematic diversion of funds at unprofitable and low-profitability farms for purposes not associated with agricultural production; the non-compensated transfer of fixed capital to other organizations; the construction of non-agricultural projects which must be financed by means of appropriations of other branches; the presentation of buildings for rent with no payment being collected; the acquisition of small automobiles and motorcycles in the retail trade, equipment for rayon public health institutes and small automobiles for the agricultural organs; the current repair of apartments at the expense of the farms; overpayments of hired brigades and construction and procurement organizations. In 1980, 41 million rubles worth of such funds were diverted, in 1981 -- 47 million rubles and in 1982 -- 59 million rubles.

The financial and bank organs and the people's control committees of the RSFSR are undertaking measures to return the diverted funds to the kolkhozes and sovkhozes and to institute criminal proceedings against the guilty parties. Over the past 3 years, more than 107 million rubles previously diverted from agriculture have been returned.



Jointly with the republic office of USSR Gosbank, the RSFSR Council of Ministers has been informed regarding the violations and shortcomings and it has called upon the RSFSR Ministry of Agriculture to undertake measures to eliminate them. However, owing to insufficient control being exercised by the RSFSR Minsel'khoz and the agricultural organs and a low degree of exactingness on the part of some bank and financial organs, the diversion of kolkhoz and sovkhos funds for purposes not associated with agricultural production continues to be quite high. In September 1982, workers attached to the RSFSR Ministry of Finances and the Russian Republic office of USSR Gosbank carried out a check on this problem at sovkhoses and kolkhozes in Lipetsk and Orenburg Oblasts and uncovered crude violations.

The diversion of funds at farms in these oblasts for the construction of projects not called for in the plan has become very extensive in nature. Last year the kolkhozes and sovkhoses spent more than 7 million rubles for the construction of 408 non-plan installations. They were often erected using hired brigades, the work of which is paid for on an arbitrary basis without taking into account the norms and this led to considerable overpayments. The party and soviet organs in Lipetsk Oblast are assisting the kolkhozes and sovkhoses in accelerating housing construction by enlisting the aid of supportive organizations. However the agricultural organs are not following up this initiative with planning and financial documentation and thus on many farms, during the erection of non-plan installations, the working capital and short-term credits are being diverted not for a special purpose into capital expenditures.

The kolkhozes and sovkhoses in Lipetsk Oblast are building 33 general purpose automobile roads at an estimated cost of 26.8 million rubles, which are not considered to be intra-farm roads. At the moment that an inspection of the mentioned facilities was carried out, 14.8 million rubles had been diverted.

In Orenburg Oblast, low profitability and unprofitable kolkhozes and sovkhoses are carrying out extensive construction work on airports of a local nature, radio relay lines (television relays), rayon hospitals, polyclinics, drug stores, administrative buildings and other installations which, upon being placed in operation, were transferred over from agriculture to other branches on a non-compensatory basis or were accepted on the balances of farms, with a subsequent diversion of additional funds for their maintenance. Costly medical equipment was procured for rayon hospitals, small automobiles and motorcycles for the agricultural organs from the retail trade and overpayments in funds were made to hired brigades and construction organizations.

The agricultural organs in Lipetsk and Orenburg Oblasts, instead of strictly observing the system for the expenditure of funds for agricultural development and holding the violators of discipline strictly accountable for their actions, quite often engaged themselves in illegal actions or promoted such actions. In Orenburg Oblast not only did they tolerate diversion of funds from the kolkhozes and sovkhoses, but in fact they even tasked the farm leaders with carrying out alien functions and serving as the clients for many large-scale non-agricultural installations. In a number of rayons, under the guidance of landing and take-off strips for sovkhoses, rayon airfields were built. Thus the agricultural organs in this oblast tasked the Sovkhoz imeni Volodarskiy, which had only a weak supply of fixed capital and which had

almost completely forfeited its own working capital, with the construction of an airfield at the rayon center Pervomayskiy. The construction of a landing and take-off strip was included in the 1981 plan for this sovkhov. In accordance with the planning and estimates documentation, the plans called for the construction of a take-off and landing strip, a taxiing strip, a platform and a passenger service building (for 20 passengers) at an overall estimated cost of 882,400 rubles. A volume of planned work for 1981 was called for in the amount of 132,000 rubles and for 1982 -- 286,000 rubles. The actual expenditures for this installation prior to 1 September 1982 amounted to 435,000 rubles, with the landing and take-off strip consuming 35 hectares of arable land. The losses in agricultural production amounted to 198,000 rubles.

Similar construction is being carried out at the rayon center of Adamovka by the low profitability sovkhov Zarya Kommunizma (only 15,000 rubles worth of fixed capital per 100 hectares of agricultural land, with the sovkhov's internal working capital of 2 million rubles being forfeited entirely).

It bears mentioning that the construction of rayon hospitals, polyclinics and drug stores, using the funds of unprofitable and low profitability kolkhozes and sovkhoves, is being carried out not upon the initiative of farm leaders but rather because the agricultural organs are violating the order of RSFSR Minsel'khov and obligating them to make funds available for these purposes. For example, over a period of a number of years in Kurmanayevskiy Rayon, 16 kolkhozes have annually sustained losses of 5-7 million rubles and forfeited almost entirely their own internal working capital, while at the same time 445,000 rubles were withdrawn from them for the construction of a rayon hospital which in 1981 was turned over free of charge to the organs of public health.

In 1982, construction work was completed on the Ilekskiy Rayon hospital (at a cost of 1.22 million rubles), the financing of which involved the withdrawal of 600,000 rubles from 13 low profitability and unprofitable kolkhozes and the almost complete forfeiting of their internal working capital. Using the funds of low-profitability and unprofitable kolkhozes, hospitals were built in the rayon centers of Ponomarevka, Novosergiyevka, Totsk and Perevolotsk at an estimated cost of 6 million rubles, with the actual expenditures amounting more than 1.8 million rubles.

For example, let us take the 12th God Oktyabrya Kolkhoz in Ponomarevskiy Rayon. From year to year, losses were sustained here (600,000-800,000 rubles). The kolkhoz forfeited its own working capital, is weakly supplied with fixed capital (27,200 rubles of fixed capital per 100 hectares of agricultural land) and it is completely dependent upon the use of credit. This did not prevent 18,000 rubles from being withdrawn from it for the construction of a rayon hospital or 28,000 rubles for a television relay.

In Orenburg Oblast, funds were withdrawn from low-profitability and unprofitable farms for the construction of powerful relays for ensuring the reception of color images and a second all-union program (at a cost of 240,000-500,000 or more rubles). Thus, in 1982, the radio relay line Sorochinsk - Ponomarevka was built in the rayon center of Ponomarevka at an estimated cost of 240,000 rubles. The construction was completely financed by means of unprofitable kolkhozes in the rayon, which for a planned norm of 15.4 million rubles worth

of internal working capital they had a shortage amounting to 22.1 million rubles, replaced by Gosbank credit. The share participation was determined by the agricultural organs proportional to the land areas of the farms. The Put' Il'icha Kolkhoz was the client for the construction. Similar radio relay lines (television relays) were built in Belyayevskiy, Matveyevskiy and Sharlykskiy Rayons in Orenburg Oblast using the funds of unprofitable and low-profitability kolkhozes.

Under pressure from the agricultural organs, administrative buildings were erected for rayon organizations and housing for individuals who do not work on farms. For example, in 1980 the unprofitable Kolkhoz imeni Lenin in Severnyy Rayon in Orenburg Oblast built and turned over to the agricultural administration of the rayon executive committee, free of charge, an administrative building valued at 119,000 rubles and the unprofitable Kolkhoz imeni Kutuzov in this same rayon built an administrative building for the rayon communications terminal at a balance cost of 90,500 rubles.

The Matveyevskiy Sovkhoz and the Experimental Model Farm imeni 50-Letiya VLKSM built two apartment buildings in the rayon center of Matveyevka, in which persons who do not work on farms and who are not paying apartment rent reside. By means of funds allocated to the unprofitable Ovoshchevod Sovkhoz, a garage was built in 1971 not on its own territory but rather in the center of Orenburg at a balance cost of almost 300,000 rubles. The farm did not operate this garage and throughout it was used by the agricultural administration of the oblast executive committee, the Sel'khoztekhnika Association and by other organizations. In addition, this garage served 19 workers of the Chkalovskiy Sovkhoz of the production agricultural administration of the Orenburgskiy Rayon Executive Committee, which has an annual wage fund of 25,000 rubles. Some kolkhoz and sovkhoz leaders are spending farm funds for the erection of memorials and monuments.

Each year many farms are employing hired brigades for the carrying out of construction work. As a result of weak control on the part of the agricultural organs in Lipetsk and Orenburg Oblasts, the wages for such brigades are inflated unjustifiably owing to raised work volumes and unsound rates. At the Kolkhoz imeni Lenin in Novosergiyevskiy Rayon in Orenburg Oblast alone, owing to rates which were inflated by a factor of 3-4, a hired brigade was overpaid by 22,400 rubles for the construction of a club and by 15,200 rubles for an 18-apartment dwelling. On the whole, overpayments amounting to more than 1 million rubles were discovered for 80 kolkhozes and sovkhozes which were inspected.

There have been numerous instances of mistakes being made by the procurement, construction and other service organization in their kolkhoz and sovkhoz accounts. In 1981, as a result of the incorrect use of prices and discounts, the oblast's meat combines fell short in their payments to kolkhozes and sovkhozes in Orenburg Oblast by 127,300 rubles. The Orsk inter-rayon Sel'khoztekhnika and the Oktyabr'skiy and Svetlinskiy Rayon Sel'khoztekhnika's in this oblast, owing to the incorrect use of prices, collected from the farms 5,500 more rubles than they should have.

With each passing year, control measurements carried out by Gosbank institutes are establishing the additions and overcharges in the work volumes by

construction organizations. Compared to 1980 when they amounted to 800,000 rubles for kolkhozes and sovkhoses in Orenburg Oblast and 1.1 million rubles in 1981, during the first 6 months of this year they totaled 900,000 rubles. For farms in Lipetsk Oblast, such additions in 1981 amounted to 384,000 rubles and for the first half of 1982 the total amount of the overcharges came to 500,000 rubles.

Considerable sovkhos funds are being diverted in Orenburg Oblast for the preparation of planning and estimates documentation, a portion of which is not used over a considerable period of time. Thus the expenses for such documentation are considered to have been wasted. During the 1980-1981 period, 500,000 rubles worth of such documentation was written off. During this same period, 138,000 rubles worth of such documentation was prepared over and above the plan. The value of the supplies of planning and estimates documentation at the beginning of last year amounted to almost 3 million rubles. This was sufficient for supporting in excess of a 4-year program of construction.

Some kolkhozes and sovkhoses are acquiring small vehicles, motorcycles and other goods from the retail fund at retail prices. Thus the Bol'shevik Kolkhoz in Akbulakskiy Rayon, the Oktyabr'skiy Kolkhoz in Oktyabr'skiy Rayon and the Kolkhoz imeni 'verdlov in Tashlinskiy Rayon in Orenburg Oblast, each acquired a Niva automobile at a cost of 10,400 rubles each, with a resultant overpayment of 21,600 rubles. The Rossiya and Nasha Pobeda Kolkhozes in Lipetsk Oblast spent 1,800 rubles for the purchase of a Dnepr motorcycle for the precinct's inspector of militia.

Some kolkhozes and sovkhoses in Orenburg Oblast are expending funds for the repair of apartments which should be carried out at the expense of the tenants. During the first 6 months of 1982 the Krasnaya Gorka Kolkhoz in Asekeyevskiy Rayon spent 24,000 rubles for the repair of apartments, the Sovkhos imeni Chkalov during 1981 -- 12,400 rubles and five farms in Sharlykskiy Rayon -- 34,700 rubles. Similar cases have also been reported occurring on farms in Lipetsk Oblast.

The materials obtained from inspections have been discussed during expanded meetings of the boards of financial administrations of the Orenburg and Lipetsk Oblast Executive Committees and by the administrations of oblast offices of Gosbank and appropriate measures undertaken.

The RSFSR Ministry of Finances and the Russian Republic office of USSR Gosbank have examined the materials obtained from inspections and they are undertaking measures to intensify control over the use of special purpose funds by the agricultural enterprises. The local financial and bank organs must also increase control over the correct and efficient use of funds intended for developing the agroindustrial complex. Those workers who encourage the kolkhozes and sovkhoses to divert funds for purposes not associated with agricultural production must be held responsible for their actions.

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## AGRO-ECONOMICS AND ORGANIZATION

### PRIVATE PLOTS, SUBSIDIARY INDUSTRIAL ENTERPRISES PROMOTED IN RSFSR

Moscow SOVETSKAYA ROSSIYA in Russian 13 Jul 83 p 1

[Article: "Subsidiary Farms"]

[Text] What can a small village consisting of 50-60 farmyards provide to the state? Up until recently, it was assumed in some areas that such a village had outlived its usefulness and become an excessive burdern. And it was easy to relegate it to the category of activities without future promise. In the eliminating two problems--reporting on, with this apology, measures taken regarding consolidation, and sparing oneself from additional trouble. The youth from such villages were astonished; those who held their ground usually complained: there was no market for the meat or milk and nobody visited them. Why mow the grasses or maintain a cow -- if it is merely to be removed from the farmyard. And the cows were disposed of! In Goluni Village, which is located in Novosil'skiy Rayon in Orel Oblast, the privately owned cows decreased by more than one half and in some areas they disappeared entirely.

As is known, these mistakes are now being corrected in all areas. During the May (1982) Plenum of the CPSU Central Committee, it was mentioned quite clearly that there can be no unpromising villages if they are capable of producing agricultural products or of making a contribution towards the fulfillment of the Food Program.

What has taken place during this small interval of time in Goluni? A great deal. The administration and party committee of the Rassvet Kolkhoz, together with the leaders of the village soviet, implemented a number of measures aimed at providing assistance to the private plots. They provided them with pasture land, feed and constant zootechnical and veterinary services for the livestock. Once again sheep, hogs, chickens and grey geese -- an ancient sign of an Orel Oblast village -- appeared in the farmyards. At a meeting of the party committee, Mariya Petrovna Dunayeva was assigned to serve as a milk collector. She is a conscientious and industrious woman. Her husband, Nikolay Konstantinovich, is one of the oblast's better known beet growers and a recipient of the Order of Lenin and the October Rebolution. In short, the Dunayev's are two of the kolkhoz's leading workers.

In 1982, as a result of persistence and business-like efficiency, Mariya Petrovna and the residents of Goluni supplied the state with more than 66 tons of milk! According to very humble estimates, such a quantity of this valuable product is sufficient for satisfying the daily requirements of a city with a

population of 120,000. Can this then be considered as an "unpromising" village? Each privately owned cow furnished 2,300 kilograms of milk for the common dining tables. In addition, it bears mentioning that the residents of Goluni also sold their surplus potatoes, meat, eggs and wool.

The creation of favorable conditions for the private plots is the responsibility of the village soviets and the kolkhoz and sovkhoz leaders. It bears mentioning that the population has a rather large number of livestock and poultry available for their private use. For example, the residents of Perm Oblast are maintaining approximately 147,000 large-horned cattle (of which 100,000 are cows), 184,000 sheep and 119,000 hogs. The state is receiving rather large quantities of output from these humble village farmyards. In those areas where the people are provided with assistance in acquiring livestock and poultry, where pasture and haying lands are being made available and where constant control is exercised over the procurements of agricultural products from citizens, the increases in output in behalf of the state are quite considerable. Unfortunately, the republic's Ministry of Trade and Rospotrebsoyuz /Union of Consumers' Societies of the RSFSR/ are still not carrying out persistent work aimed at attracting additional products from the population or expanding the commission and market trade. All of this is restraining growth in the private plots. And here, certainly, a broad field of activity is opening up for displaying business-like efficiency and industry by the leaders at all levels -- from the ministries down to the village soviets and procurement offices.

It is commendable when the operator of a farmyard breeds domestic poultry, tends his garden in an enthusiastic manner and pursues his own personal as well as the state's goals. Such an individual is usually well respected throughout his district. Neighbors and comrades in work come to him in order to profit from his worldly experience and to obtain wise advice. He works just as diligently in the public fields and in front of a machine in a department. It is a noble task to provide support for such an individual.

Facts of another type are being encountered. A diligent head of a farmyard is being transformed into a self-seeking petty proprietor. He utilizes his private plot as a means for obtaining profit. The limit of his conscientiousness is exceeded. He is oblivious to our interests and material potential. At some stations and villages in the Karachayevo-Cherkessii region, some petty proprietors believe that they are immune to punishment. Under the pretext of their herds being kolkhoz herds, they allow them to graze in the mountains. At one time, this negative phenomenon was severely rebuffed by the bureau of oblast committee and the Stavropol Kray CPSU Committee and yet it has still not been eradicated entirely.

In short, the party organizations, during the course of attracting the able-bodied population into participating in the production of additional agricultural products, must persistently and skilfully instill in each farmyard owner a clear understanding of the need for conscientious labor in behalf of both his own and the common interests. During the June Plenum of the CPSU Central Committee, the statement was made, and properly so, that in addition to material values an individual is also obligated to create and develop his own best creative capabilities and prove himself to be a good citizen and an active builder of communism.



As is well known, subsidiary farms are now being created on an industrial basis at many enterprises and organizations, farms which will be capable in the near future of furnishing a considerable increase in food products. Live operational practice engenders new structural forms in which the interests of all are more fully reflected. Conditions for the production of agricultural products on a contractual basis are being created in a very energetic manner in Moscow Oblast. The farms are concluding contracts with enterprises, settlements and individual citizens. The collectives of plants are supplying the equipment, seed, fertilizers and livestock, that is, everything required for the work. Taking advantage of the opportunities being made available, the partners of the kolkhozes and sovkhoses are growing products and retaining one half of them for the purpose of satisfying their own needs. In addition, a collective which furnishes patronage assistance to a farm can receive in return a payment in kind -- vegetables, berries and so forth. The Zhukovka Wood Processing Combine even completes houses of the farmstead type for villagers on a contractual basis. And the residents in Kashirskiy Rayon, by carrying out the orders issued by village gatherings, acquired hundreds of thousands of additional poultry and young pigs and acquired young bulls for fattening (again on a contractual basis). The oblast party committee considers it completely realistic to organize the fattening of 100,000 non-calving young cows in the near future at various subsidiary farms throughout the oblast.

The well-spring of national initiative is inexhaustible. In this same Perm Oblast, there are already 563 subsidiary farms of various ministries in operation. Rather powerful agricultural departments have been created at large enterprises in Orel Oblast. A steel-rolling plant has been allocated 1,500 hectares of land. Before long it will be provided with another 1,500 hectares. In essence, the plant will eventually have at its disposal the land area of an average kolkhoz. True, this land includes many ravines, unsuitable tracts and swampy soil. But the task consists of bringing all of this land "to life" and placing it at the service of the national economy. The steel-rolling workers have already organized the fattening of hogs and at the same time they are engaged in building animal husbandry complexes. Their neighbors, workers attached to a municipal trust for dining halls and restaurants, are also engaging in this work. They are also engaging in the fattening of hogs and completing the erection of the first phase of a complex.

There is one curious fact: the question as to how work is proceeding on the subsidiary farms is always followed by a cheerful answer: good! Moreover, they do not fail to cite the figures: how many animals have been fattened and how many remain to be fattened in accordance with the plans. The figures are not as impressive as they could be. However, they are not so miserly that they should not be taken into account. During the first quarter, the mentioned trust produced more than 60 tons of pork and this amounted to roughly 11 percent of the fixed capital. Generally speaking, this was not bad. Unfortunately however, the production cost for the meat was higher than that planned. The expenses were high. There are some subsidiary farms where the production costs are greater by a factor of three or even four than those at conventional kolkhozes and sovkhoses. It is said that expenses during the developmental period are inevitable. Such an opinion is debatable! Let us look truth straight in the eye. Indeed there are many leaders who merely talk about subsidiary farms and view this work as being of secondary importance,

in the nature of a burden imposed upon them. They do not investigate the economic essence of the problem. They do not wish to analyze it seriously, but instead they display a narrow-mindedness of economic thought.

This has led to a situation wherein the rural farms of enterprises, organizations and institutes in the Russian Federation are only weakly supplementing the country's food resources. As mentioned during the recent session of the RSFSR Supreme Soviet, the proportion of the products being produced by them does not exceed 4 percent.

The economic activities of subsidiary farms must become an object of attentive and strict concern by the party committees. The leaders of enterprises, upon acquiring subsidiary farms, are obligated to display initiative and socialist enterprise in the interest of improving the final results with minimal expenditures.

The agricultural departments of enterprises in fact represent changing social and production relationships. Concern for their successful activities is equivalent to displaying vital interest in the prospects for developing the enterprises and in the well-being of the workers and rural labor collectives.

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## TILLING AND CROPPING TECHNOLOGY

### IMPORTANCE OF GOOD WORK ORGANIZATION IN HARVEST OPERATIONS

Moscow ZERNOVOYE KHOZYAYSTVO in Russian No 6, Jun 83 pp 2-4

[Article: "Harvest Conveyor Line"]

[Text] The first receipt! This exciting feeling is known not only by people of the older generation -- the first on their farm or in their rayon, oblast or kray to deliver grain to the elevator and the first to receive the cherished receipt. This feeling and this patriotic aspiration express the moral essence of the harvest campaign. Indeed the first precept of a farmer and all agricultural workers is that of fulfilling their obligation in behalf of the homeland and filling the granaries with grain.

The first precept! Today this phrase takes on special meaning. Indeed the present harvest crowns the middle of the 11th Five-Year Plan. In addition to coping with the current year's tasks, we must also make up for shortfalls sustained in past years, caused by difficult natural conditions. This is why such importance is being attached to each ton of grain sold to the state. The national granaries must be filled to the very top and losses must be prevented along the entire length of the grain conveyor line: the crop must be harvested down to the last ear out on the fields and it must be protected during shipment, during processing on the threshing floors and during delivery to and storage at the elevators.

Each harvest period has its own particular peculiarities. One must be prepared for weather surprises during the harvest campaign.

During the harvest period importance is attached not only to harvesting all of the new crop but also to establishing a strong foundation for the future harvest. This can be achieved only by carrying out the harvest work in a complex manner, through a high level of organization for the work being performed by all teams of the harvesting-transport complex and by employing progressive technologies and making maximum use of the equipment.

It has been established that a delay in carrying out the harvest work of 10 days, following the onset of complete ripeness, leads to losses amounting to 10 percent, 20 days -- 20 percent and 30 days -- 40 percent. The least amount of crop losses occurs when the grain is threshed within 5-7 calendar days from the onset of complete grain ripeness.

In recent years the harvesting of grain and pulse crops in Krasnodar Kray has been carried out only on a complex basis and during the optimum periods. Attendant operations are carried out simultaneously: gathering up of the non-grain portion of the crop, removal of stubble, applications of mineral and organic fertilizers, plowing up of bastard fallow, post-harvest sowing of forage crops.

According to data supplied by the Kuban Agricultural Institute, a delay of 1 day in tilling the soil leads to a loss in the future harvest of up to 30 kilograms per hectare. In the process, the specific resistance of the soil is increased considerably and this raises the expenditure of fuel and lowers the productivity of the units.

The basic principles for the highly productive use of grain harvesting combines are well known. This includes the group operation of units together with harvesting-transport teams, detachments and complexes, maximum utilization of every 24 hour period, a watch regime of operation for the machine operators, timely and high quality carrying out of specialized technical servicing work, the organization of food and recreation services for the machine operators at field camps, the use of effective moral and material stimuli and publicizing of the socialist competition.

Successful harvest operations are promoted mainly by efficient planning of the work of the harvesting-transport complex.

The plan for preparing for the crop harvesting work and for carrying it out will contain organizational-technical measures, an account of the material and labor resources and also of the requirements for fuel and lubricating materials.

The plan provides data on the crop harvesting areas, the crop yields, the gross grain yield, the harvest periods and methods, the optimum workload per unit and on the quantitative and qualitative structure of the technical equipment, taking into account the availability and possibility of obtaining it on the side. It indicates the requirements for machine operator personnel for around-the-clock work by all of the units and it outlines the sources for augmenting their ranks: attracting machine operators from other sectors and industrial enterprises.

The organizational-technical measures include the principal agrotechnical requirements for the harvest, the work periods, the structure for the complex and teams, the problems concerned with organizing repair operations and technical servicing for the machines under field conditions and the availability of communication equipment.

Such planning is making it possible to clearly define the role of each participant in the harvest work and to eliminate organizational discrepancies in an efficient manner.

Teams which operate on the basis of a single order are appearing more frequently in connection with the carrying out of harvest work. Experience has shown that the organization of such teams is an effective means for raising the culture of farming and improving the use of equipment.

The creation of harvesting-transport teams for harvesting grain crops represents a new stage in improving organization for the carrying out of work. As a rule, such a team works on one field. The transport equipment for removing the grain and the non-grain portion of a harvest is assigned not to individual combines but rather to a team as a whole. It is staffed by two shifts of machine operators and service personnel, the wages of which are dependent upon the final results (gross yield and work quality). This creates the required prerequisites for achieving high personal and overall indicators. A favorable psychological atmosphere is created in such collectives. The operational results of such subunits are considerably higher than those realized when group operations are employed.

Leading harvesting-transport teams are increasing their daily output to 20 hectares, with yields of 80-100 tons per combine. Thus, for all practical purposes they are realizing the technical potential of their modern harvest equipment. This is convincingly borne out by the operational results of the harvesting teams of N.V. Bochkarev, V.M. Voronin, N.V. Pereverzeva, N.S. Dovbenko and other illustrious machine operators.

Quite often, during the course of organizing harvest operations involving use of the group method, the harvesting-transport complex is assigned the same number of transport vehicles as it has combines. Such practice inevitably leads to equipment idle time. The combine operators often have to wait for transport vehicles for the grain to be unloaded, while the transport vehicles lie idle waiting to be loaded. As a result, the losses in working time for the combine operators often reach 30 percent and for the drivers of the transport vehicles -- 50 percent. If a combine of a team breaks down, the flow of goods from that team decreases by 20-33 percent. In such instances, the idle time of the transport vehicles is even greater.

The feasibility of transporting grain from the combines by means of motor vehicles is definitely limited from an economic standpoint, since a large portion of these vehicles are diverted for harvesting purposes from non-agricultural departments. This involves additional expenses owing to the delays that take place in the transporting of their own goods and also because of the considerable expenditures required for delivering the vehicles and their drivers to the work areas and back. In addition, a work regime on a stubble field differs substantially from an optimum regime and leads to raised expenditures for fuel and increased expenses for technical servicing and repair work.

In this regard, an important problem has arisen in connection with procuring transport equipment for the harvest period and also selecting efficient forms for organizing the transporting of grain from combines in keeping with the specific conditions found at each farm.

Depending upon the types of transport equipment selected and the forms for their use, the harvest expenditures may fluctuate by a factor of 2-3 and the requirements for rolling stock and drivers -- by 10-12. Thus, streamlining of the the methods employed for transporting grain from combines represents one specific means for raising the efficiency of use of harvesting-transport equipment.



In the southern Urals, western Siberia and the north Caucasus, use is being made of the combine-trailer method of grain removal. The grain is offloaded from combines into motor vehicle trailers, which subsequently are towed to a road by Belarus' tractors. They are towed to the threshing floor by a motor vehicle tractor, the body of which is also loaded with grain. This makes it possible to reduce considerably the requirements for motor vehicle transport.

Labor productivity in the transporting of grain from combines can also be raised through the efficient use of heavy-freight transport vehicles, which the kolkhozes and sovkhoses have at their disposal.

On many farms in northern Kazakhstan, the large-group method of combine operation is being employed successfully, with centralized unloading and removal of the grain from the combines using Kirovets tractors. In terms of speed and under field conditions, these tractors are not inferior to the GAZ-53 and ZIL-130 vehicles and they surpass them in terms of carrying capability by a factor of 4-5. The use of Kirovets tractors for the removal of grain requires that all of the combines of a brigade be concentrated on the same field. In the process, all types of services for the machines and personnel are simplified considerably, working conditions are improved, the process of making fields available for the autumn tilling of soil is accelerated, the crop accounting procedures for individual fields are simplified as is also the organization of work on the threshing floor. The productivity of the transport equipment increases by a factor of 10-15 and that for the combines -- by 15-20 percent or more.

The essence of the method consists of achieving efficient use of heavy freight transport vehicles for the removal of grain from combines, reducing to a minimum the idle time of combines while waiting to offload grain into transport vehicles and also the idle time of transport vehicles while waiting to have their bodies filled and it completely eliminates their movements about the fields for the purpose of harvesting the grain.

The efficient use of heavy freight transport vehicles for removing grain from combines is making it possible to lower considerably the labor expenditures involved in harvesting the crop, to raise the effectiveness of use of K-700 and K-701 tractors and their ganged trailers and also to reduce the diversion of motor vehicle transport from industrial and other enterprises. This is being achieved by concentrating the combines on the same plot and through the centralized unloading of grain from them in strictly defined areas. This is increasing the flow of grain for the rapid loading of transport vehicles and it is accelerating their turnover.

During the harvest period, when the duration of the working day has increased and the work tempo is especially tense, there is a greater requirement for providing the machine operators with the required domestic conditions and improved nourishment and recreation. This has a great effect on labor productivity.

On many farms in the Kuban and Don River region and in Stavropol Kray and the Ukraine, domestic services for the machine operators are at a high level. They are provided with three hot meals daily out on the fields. For rest

purposes there are tents and mobile field housing units containing the necessary bedding. Showers and hot water are available. For quenching one's thirst -- a fermented drink and refreshing beverages. Current newspapers and magazines are available at the field camp and each day the machine operators are provided with information on the course of the socialist competition.

To cultivate a fine crop is a high honor and to harvest it down to the last kernel -- a great achievement. Thus it is a sacred task for each participant in the 1983 harvest to combat losses in a decisive manner during all stages of the harvest work. Indeed, just one ear left behind per square meter represents 10 kilograms of grain lost per hectare. One handful of wheat spilled out of a motor vehicle, magnified for the country as a whole, amounts to tens of thousands of tons of lost grain. Such a situation cannot be tolerated. Grain cultivated at the cost of great effort must be protected down to the last kernel.

Recently the CPSU Central Committee has on more than one occasion directed attention to the fact that the present harvest campaign is a most important economic-political campaign. Actually, the first 2 years of the five-year plan were very unfavorable from the standpoint of weather.

However the economic potential of the agroindustrial complex, which today is great and mobile as never before, is making it possible for us to make up for the shortfall in field and farm products experienced during the past few years. And the organizational formula here must be the use of collective contracts in the rural areas, contracts which combine (as a method) responsibility for assigned tasks, initiative, high technological discipline and good earnings for each individual depending upon the harvest.

More grain -- a richer homeland! A high obligation of the farmers is that of fulfilling and overfulfilling their plans and obligations, obtaining high yields this year and supplying the country with more grain and other farming and animal husbandry products.

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## TILLING AND CROPPING TECHNOLOGY

### APPLICATION OF TECHNOLOGY FOR HIGH-YIELD GRAIN PRODUCTION

Moscow EKONOMICHESKAYA GAZETA in Russian No 27, Jul 83 p 2

[Article: "Intensification of Grain Farming" survey prepared by the administration of the agro-industrial complex of the USSR State Committee for Science and Technology]

[Text] An important role is to be played by the special-purpose comprehensive scientific and technical program that is being implemented under the 11th Five-Year Plan, "Increasing Grain Production on the Basis of the Application of Highly Effective Agrotechnology, Fertilizers, Means of Plant Protection, New High-Yield Strains and Means of Mechanization That Provide for an Increase in the Gross Grain Yield of No Less than 20 Percent and an Increase of Labor Productivity of 20-30 Percent." Its main feature is the comprehensive inclusion of all stages of grain production.

This program includes conducting scientific research on selection and seed growing, technologies for cultivating, harvesting and post harvest processing of grain of 6 spike crops, 7 pulse crops and corn. More than 250 scientific research and experimental design institutions of 9 ministries and departments are participating in its implementation.

#### Strain, Technology, Machine

It is intended to create more than 220 new highly productive, high-quality strains and hybrids, 72 of which will be introduced in the main zones of grain production under the current five-year plan. They include:

winter wheat with a productivity of from 40 to 75 quintals per hectare;

spring wheat--from 25 to 50 quintals per hectare;

rye--from 25 to 60 quintals per hectare;

spring and winter barley--from 35 to 65 quintals per hectare;

oats--from 35 to 65 quintals per hectare;

food and grain-forage peas with a productivity of from 30 to 47 quintals per hectare and white lupine for feed with a protein content in the seeds of from 41 to 59 percent and a productivity of 25-30 quintals per hectare;

corn hybrids which have valuable economic indicators, are immune to the main diseases and pests and provide for obtaining stable guaranteed yields of grain.

There is also to be further development of research on changing seed growing over to an industrial basis with the utilization of mechanized comprehensive points and plants for processing and storing seeds. Systems for efficient organization of industrial seed growing of grain spike and pulse crops have been determined for various zones of the country.

They are developing 16 new technologies for mechanized cultivation, harvesting and post harvest processing of grain, which are directed toward achieving stable yields throughout the years. Seven of these will be applied even under the current five-year plan.

Every technology like this includes improved devices of agrotechnology, highly productive strains, effective fertilizers and toxic chemicals, and a complex of highly productive machines.

For mechanization of the production of grain and seeds the program includes the creation and assimilation of 20 new kinds of technical equipment, of which 14 will be put into series production under the current five-year plan at enterprises of the Ministry of Agricultural Machine Building. The innovations include:

- a combined set of equipment for preplanting preparation of the soil (loosening, leveling, rolling) for a tractor of pulling class 3;

- a combined set of equipment for basic cultivation of the soil for winter grain crops for a tractor of pulling class 8;

- a universal 12-roll seeder for precision seeding with equipment for applying fertilizers for plantings of corn, soybeans and other crops;

- a self-propelled grain harvesting combine with a handling capacity of 10-12 kilograms of grain mass per second;

- an SKD-6N Sibiryak combine with a handling capacity of 6.3 kilograms of grain mass per second;

- a wide-grasp self-propelled grain reaper based on the high-powered KPS-5G installation;

- a self-propelled pulse grain reaper-adapter;

- sets of grain cleaning equipment and grain-cleaning-drying complexes.

Another comprehensive scientific and technical program is directed toward increasing grain production in the country: "The Creation and Assimilation of Highly Productive Strains of Rice, Technological Processes and Equipment for its Cultivation, Harvesting and Post-Harvest Processing." In keeping with it, it is intended to isolate 26 new, highly productive strains with a potential

productivity of 110 quintals per hectare. By 1985 the areas planted in these strains will amount to 300,000 hectares--60 percent of the areas planted in rice. A task has been set to reduce labor expenditures on the main kinds of work by 40-50 percent and to reduce losses of the crop by 15-20 percent.

They will develop and introduce new designs for rice irrigation systems, methods of operating them, technological processes and means of automation of the irrigation of rice and accompanying crops. For example, a system is being created with automatic distribution of the water among the paddies and regulation of the level of inundation. On rice plantations there will be a self-propelled reaper with a high degree of passability and a rolling furrow cutter for drainage. They have begun to produce the self-propelled SKD-6R rice harvesting combine. Work is being continued on the creation of a set of rice harvesting equipment with a handling capacity of 10-12 kilograms per second. This is a modification of a grain harvesting combine. It is also intended to produce a principally new rice harvesting combine with a threshing device of the combing type, which will make it possible when harvesting non-lodging strains of rice to reduce losses of grain by two-thirds-one-half and to reduce the crushing of it.

#### The Course of Implementation

On the whole both programs are being implemented strictly in keeping with the earmarked plans. In 1982 170 strains and hybrids of grain crops were submitted for state testing instead of the 58 which was the assignment for this period. The new strains of grain crops have been cultivated on an area of 7.8 million hectares while the plan was for 5.5 million hectares.

Highly productive short-stalked strains of soft winter wheat are being created and introduced into production--Polukarlikovaya 49 and Odesskaya polukarlikovaya; hard winter wheat--Parus, which is as productive as durum wheats; short-stalked strains of winter rye--Culpan and Voskhod; highly productive strains of peas which do not shed when ripening--Neosypayushchiysya 1 and Voroshilovgradskiy; early ripening and medium ripening hybrids of corn--Krasnodarskiy 62 MV, Odesskiy 80, Bukovinskiy II T, Kollektivnyy 201 and others which provide for obtaining a yield of grain of 50-65 quintals per hectare and ripen reliably in the northern corn growing zone.

Certain progress has been achieved in the selection of grain forage crops. The area planted in the new strains of barley--Odesskiy 70, Zernogradskiy 73 and Zavet 3--and also oats--Gorizont, Mirnyy, Ruslan and others--in 1981-1982 amounted to 446,400 and 723,500 hectares, respectively.

Scientific fundamentals have been developed for specialized industrial production of seeds of grain crops as have zonal recommendations for the acceleration of the changeover of seed growing to an industrial basis and efficient distribution, specialization, concentration and interfarm cooperation of seed production.

Proposals have been prepared for accelerating strain replacement and introducing into production new strains of grain spike and pulse crops. Plans have been earmarked for accelerated raising of elite seeds of grain spike crops which provide for increasing the coefficient of the propagation of seeds 1.5-2-fold and obtaining high qualities of productivity.



The All-Union Scientific Research Institute of Grain Farming has developed technological systems for cultivating grain spike crops in the main arid soil and climate zones of Kazakhstan with a given level of productivity. The Siberian branch of VASKhNIL in conjunction with the RSFSR Ministry of Agriculture, with the participation of the leading scientific research institutes, has recommended for regions of the Ural area, Siberia and the Far East technological systems for cultivating grain of spike crops which produce 16-20 quintals per hectare, and they have determined a network of farms for introducing them on an area of more than a million hectares.

The Scientific Research Institute of Agriculture of the Central Regions of the Nonchernozem Zone and the Northwestern Scientific Research Institute of Agriculture have developed technological systems for cultivating grain spike crops which make it possible to obtain 25-30 quintals per hectare with the existing material and technical resources. They are developing progressive technological processes for cultivating and harvesting grain spike crops in other main grain producing regions of the country.

Plans for introducing progressive technologies for cultivating, harvesting and post harvest processing of grain spike crops in 1981-1982 have been fulfilled, and in full volume.

The All-Union Scientific Research Institute of Corn and other scientific institutions have conducted a great deal of work to improve industrial technology for cultivating corn for grain in various zones of the country. In 1981 industrial technology was introduced on an area of 2.34 million hectares and in 1982--2.68 million hectares. Under the unfavorable weather conditions of these years it provided for an increase in the yield of grain of 9.7 quintals per hectare in 1981 and 6.3 quintals per hectare in 1982 as compared to that produced with ordinary technology.

For the main soil and climate zones of the country plans have been prepared for standard technological charts for cultivation, harvesting and post harvest processing of grain spike crops.

The parameters of the equipment for future highly productive flowlines for processing and storing grains and seeds have been established. Agrotechnical requirements have been determined for an installation for preplanting treatment of the seeds, a seed cleaning machine with a productivity of 20 tons per hour, a pneumatic sorting table, an installation for decontaminating seeds, and a machine for preliminary cleaning of 100 tons of grain per hour.

Experimental models of new, highly productive grain harvesting equipment have been created: self-propelled combines with a handling capacity of 10-12 and 7-8 kilograms per second, suspended swathe reapers with 6- and 10-meter grasps on a self-propelled chassis of the KPS-5G type. Series production has been started on the SKD-6 Sibiryak combine at the Krasnoyarsk combine plant.

As for rice, 4 strains have been submitted for strain testing, 2 of which are from the selection of the Krasnodar Scientific Research Institute of Agriculture and 1 each from the All-Union and the Kazakh Scientific Research Institutes of Rice.

The All-Union Scientific Research Institute of Mechanization has developed a plan for technology for rototilling rice paddies that have been flooded with water. Experimental design work is being continued for creating technical means of producing rice grain.

They have manufactured experimental models of a self-propelled rice reaper with high passability, and self-propelled caterpillar and selection combines. They have manufactured installed series of the BDN-150 roller furrow maker and the ZHRN-3 reaper. Series production has been started on the SKD-6R rice grain harvesting combine with an average handling capacity for various crops (wheat, rice, soybeans) of 5-8 kilograms of grain-stalk mass per second.

Planning documentation has been prepared for experimental production sections of rice systems of the Kuban type with automated distribution of water among the paddies and regulation of the level of flooding during the period of decomposition of the herbicides. For Maritime Kray a technological process has been developed for drainage and assimilation of virgin overmoist and peaty land as well as a design for an experimental production system for draining rice paddies with closed drainage.

#### What Is Impeding Implementation

At the same time there are certain shortcomings in the implementation of the special-purpose comprehensive programs.

Up to this point the USSR Ministry of Agriculture and the republic ministries of agriculture have not finished determining the farms that are to produce seeds of the highest reproductions of grain spike crops, pulse crops, rice and corn to be provided for the kolkhozes and sovkhozes.

A number of scientific research institutes have allowed arrears with respect to individual points. Thus the Ukrainian Scientific Research Institute of Irrigation Farming (director--V. Ostapov) has not completed within the earmarked times the work with the short-stalked strain of soft wheat with a potential productivity of 50-55 quintals per hectare and a growing period of 95-100 days.

The Stavropol Scientific Research Institute of Agriculture (director--V. Penchukov) did not meet the deadline for submitting for state testing the strain of spring barley for feed with a growing period of 90-95 days and a productivity of 60-65 quintals per hectare. The Uzbek Scientific Research Institute of Grain (director--M. Amanov) was late in submitting for state strain testing spring wheat with a plant productivity of 60-65 quintals per hectare and a growing period of 125-130 days. This same institute failed to fulfill the assignment for mowing peas with a productivity of green mass of 90-100 quintals per hectare and seeds--35-40 quintals per hectare, containing 17-19 percent protein per hectare, and having a growing period of 90-100 days.

For 2 years the assignments have not been fulfilled for selection of spring wheat at the All-Union Scientific Research Institute of Grain Farming (manager of the selection center--O. Khorikov).

The scientific research and design organizations of the Ministry of Agricultural Machine Building (deputy minister--G. Kirichenko) are still not adequately resolving problems of the creation and assimilation of new highly productive machines for industrial technologies for producing spike and pulse crops, rice and corn. They are not enlisting in the development of experimental equipment those organizations that will be responsible in the future for assimilating series production of metal seed and grain storehouses and installations for preplanting processing of seeds.

The Ministry of Agriculture should consider the question of including in the program of assignments for creating various modifications of combines, with respect to the basic zones, wide-grasp headers (7, 9 and 12 meters) and self-propelled wide-grasp swathe reapers, and also assignments for creating technical means for harvesting the nongrain part of the crop.

Scientists and production workers must exert maximum efforts and energy in order to make up for the past in 1983 and provide for unconditional and prompt fulfillment of all the assignments of the special-purpose comprehensive scientific and technical programs for producing grain in the country.

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## FORESTRY AND TIMBER

### UTILIZATION OF TIMBER RESOURCES IN KOMI ASSR

Moscow LESNAYA PROMYSHLENNOST' in Russian 5 Jul 83 p 2

[Article by M. Chukichev, deputy chairman of the Komi ASSR Gosplan; G. Kozubov, department chief of the Institute of Biology of the Komi Branch of the USSR Academy of Sciences, doctor of biological sciences, professor; Ye. Ruchin, deputy chief of the division for the timber industry of the Komi CPSU Obkom; and V. Aleksandrov, director of the Komi Institute of Gipronillesprom: "how to Become a Good Manager"]

[Text] "To create additional capacities for producing paper in the Syktyvkar timber industry complex." This task, which was set by the 26th Party Congress, will be carried out through the construction of a third section of the gigantic timber and chemistry enterprise in Vychegod, which will include a factory for newsprint with a capacity of 360,000 tons a year, and a sulphate pulp and wood pulp plant. When it goes into operation the annual demand of the Syktyvkar'skiy LPK production association for raw material will increase to 5 million cubic meters of wood. And today, even though the preparation of the planning estimates has not even been started, we should like to discuss a number of principle considerations regarding the third section of the association and also long-term comprehensive utilization of the timber resources of the Komi ASSR.

#### The Contours of the Third Section

Let us begin with the fact that the volume of timber procurements in 1990 in the consumer raw material base assigned to Syktyvkar'skiy LPK and the Kotlas Pulp and Paper Combine will amount to 22.4 million cubic meters of wood, including 5.4 million cubic meters of deciduous wood. According to rough planning figures, the overall volume of processing of deciduous wood, not including the third section, will amount to about 4 million cubic meters a year in the republic, and 1.5 million cubic meters of it will not be sold. In addition to this the timber procurement enterprises are organizing the production of industrial chips from deciduous wood in a volume of 250,000-300,000 cubic meters a year.

In spite of the fact that 50 percent of the 2.4 million cubic meters of timber that is processed by the association comes from deciduous trees, complete utilization of the latter is a critical problem in the republic. Deciduous wood that has already been shipped to the lower warehouses is rarely sold. As a result, the time periods of operation of the raw material bases are reduced and a considerable proportion of the timber resources are lost for good, which, in turn, has a negative effect on the economic indicators of the timber procurement enterprises.

But what does the future hold? One can say with confidence that the proportion of deciduous trees in the timber felling supply of the Komi ASSR will inevitably increase. This is explained by the following circumstances. After concentrated fellings, no less than 50 percent of the young trees in the forest are replacement varieties. Even today the area of exclusively pure deciduous young trees amounts to 1 million 73 thousand hectares.

All these facts lead to a conclusion: the proportion of deciduous wood acquired in the republic and processed in the Syktyvskarskiy LPK association should increase. Hence the question of planning and construction of a third section of the complex can be expediently considered only on the basis of complete utilization of deciduous raw material. The developments of specialists of the association, Giprobum, the Central Scientific Research Institute of Paper and Giprolestrans pertaining to the capacities, profile and assortment of products of the third section show the possibility of increasing the consumption of deciduous wood to 2.3 million cubic meters a year.

Along with increasing the consumption of deciduous wood, it would be desirable for the association to increase the annual deliveries of it outside the republic, particularly to the Kotlas pulp and paper combine, to a million cubic meters and to increase the processing at enterprises of Komileprom to 850,000-900,000 cubic meters.

In our opinion, it is important in the near future to consider the question of the possibilities of constructing a combine in the republic for comprehensive chemical processing of deciduous wood using ethyl alcohol, furfural and phenol with an annual consumption of low-quality liquid wood of about 600,000-700,000 cubic meters a year.

At the same time we should like to draw the attention of the USSR Gosplan and the USSR Ministry of the Timber, Pulp and Paper and Wood Processing Industry to the following aspect. The construction industry of Syktyvkar is now concentrated in the second section of the LPK, all of whose capacities are to be put into operation in 1986. It would make sense to transfer the construction workers without delay to the objects of the third section of the complex. To do this it is not necessary to complete the planning under the current five-year plan. Otherwise we will repeat a mistake of the second section, when we had to begin building it in Syktyvkar 2 years behind schedule. The construction forces were essentially dispersed.



## Handling Things Intelligently

Party workers, executives and specialists of the Komi republic are also bothered by other problems related to intelligent utilization of the wealth of forests. Here is one of them. On the territory of the Komi ASSR they are forming a powerful timber industry complex which includes the timber procurement, wood processing and pulp and paper industries as well as forestry. An average of 23 million cubic meters of timber are annually felled here, which comprises about 6 percent of all the timber procurements in the country. During the years of the 11th Five-Year Plan it is intended to increase the sum of capital investments in the enterprises to hundreds of millions of rubles.

But, in spite of this scale, the timber industry complex in the republic is still not very intensive. Up to this point less than half of the procured wood is processed in it. About 55 percent of the gross output in the timber industry comes from the timber procurement branch, and the proportion of the wood processing industry amounts to 21.4 percent, and pulp and paper--only 24 percent. In addition to large enterprises of the USSR Ministry of the Timber, Pulp and Paper and Wood Processing Industry, a whole number of small, economically inefficient self-procurement enterprises procure wood from the forests of the republic, which leads to breaking down and premature exhaustion of the timber supply.

Other factors also exert a negative influence on this. The overall volume of timber utilization, as we know, is determined by the calculated felling area. But so far the Komi ASSR does not have a calculated felling area that is based on a long-term period. At the present time annual felling areas have been established for the forests of the third group in the amount of 32.8 million cubic meters. This means that all available supplies of timber will be removed in 40-45 years.

Yet calculations of long-term timber utilization in the Komi SSR that were made by specialists of the KomigiproNIIlesprom, Giprolestrans, the Komi SSR Ministry of Forestry and scientific workers of the Komi branch of the USSR Academy of Sciences, which take into account continuous supply of raw materials for the Syktyvkar'skiy LPK association and the Kotlas pulp and paper combine as well as the milling and timber processing industry of the Komi ASSR and Arkhangelsk Oblast, and also planned deliveries of timber to other regions of the Soviet Union, show that the amount of annual utilization should not exceed 26-28 million cubic meters. If the calculated felling area were established in this volume one would be observing the basic principle of forest legislation of the USSR and the instructions of the 26th CPSU Congress concerning the changeover to continuous utilization of forests. That is, extremely dense and overgrown forests would be felled in 65-70 years. But by that time the young and almost mature plantings would be of the right age for felling.

Even in 1976 the Giprolestrans institute drew up technical and economic substantiation for a combined timber raw material base for the Kotlas pulp and paper combine and the Syktyvkar timber industry complex. But up to this point it has not been approved. And today it is very difficult to speak about the actual condition of the combined raw material base. We think that in order to solve the problems of expanding timber industry complexes, it is necessary to

have a legal document for the composition and staffing of the consumer base. Almost 7 years have passed since the formulation of the technical and economic substantiation. Certain new aspects have appeared in the development of the republic's timber industry complex, and therefore it seems that this work requires immediate adjustment.

The condition of forest restoration work in the republic causes serious alarm.

It should be emphasized that capital expenditures on forestry in the republic are the lowest in the European north of the country: they amount to 3 kopecks per hectare of state forest supply while the average for the country is considerably greater. Under the 11th Five-Year Plan as compared to the 10th the amount of capital investments in forestry in the Komi ASSR decreased by 1.4 million rubles, and the financing of construction and installation work decreased by almost half. The fulfillment of the majority of planned work is being impeded because of a shortage of financing. The situation is also exacerbated by the shortage of labor force and skilled specialists.

The results of the activity of our foresters during the past decade are characterized best by the following figures. During 1971-1980 the overall area of concentrated fellings in the Komi ASSR amounted to about 2 million hectares. The undergrowth was also maintained on an area of 1,333,000 hectares and cultivated coniferous breeds were planted on 234,000 hectares. One can expect that the restoration of coniferous forests will be ensured on no less than 70-80 percent of the felling area. But a study of the dynamics of the composition of young planted areas conducted by the Severnyy enterprise of Lesproyekt on an area of 2.8 million hectares showed that only 42.7 percent of the areas felled in 1970-1985 were actually restored with conifer and spruce trees, and 57.3 percent of the investigated area was restored with birch and aspen trees.

Special alarm is caused by the unsatisfactory restoration of the main forest variety of tree in the Komi ASSR--spruce. During the past 40 years spruce areas have been formed on only 9.2 percent of the areas that have been felled.

In order to maintain long-term and inexhaustible utilization of the forests in the Komi ASSR, it is necessary to carry out measures for radically improving the entire complex of forestry work. It is extremely important in the next 2 or 3 years to develop a long-range scientifically substantiated plan for the intensification of forestry with the determination of a complex of immediate measures directed toward providing for permanent forest utilization, increased efficiency of forest restoration work and increased productivity of the republic's forests.

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## WATER RESOURCES

### CLEANER OPEN WATER BODIES URGED IN KAZAKHSTAN

Alma-Ata PARTINAYA ZHIZN' KAZAKHSTANA in Russian No 4, Apr 83 pp 63-67

[Article by V. Golovin, chief, Main Administration for the Protection of Water Sources, Kazakh SSR Ministry of Land Reclamation and Water Resources: "For Cleaner Water Reservoirs"]

[Text] From childhood on we are accustomed to respect bread. Water should be spoken of with great respect, just like bread. For it is simply impossible to enumerate all the merits of this valuable natural resource, which is both the basis of life and an irreplaceable component of man's economic activities.

The 26th CPSU Congress devoted very great attention to conservation of natural resources, of which water is most important. The congress pointed to the great urgency of this task, considering that nonrenewable resources are concerned here. We bear responsibility for their proper and rational utilization not only to the current but also to the future generations. No one has the right to forget this.

Kazakhstan is famed for its natural wealth. This republic is the country's largest producer of lead, the second-largest producer of copper and the third-largest producer of zinc. These and other industrial subsectors as well as agriculture consume vast quantities of water.

However, Kazakhstan's water supply remains insufficient, being only one-fifth as large as that of the RSFSR and one-eighth that of the Ukraine. Moreover, in this republic water resources are very nonuniformly distributed. A comparison of usable water resources with the demand points to a water deficit at present in the basins of the Syr-Dar'ya, Ural and Chu Rivers. In the long run a water deficit is practically unavoidable in North, West, South and Southeast Kazakhstan.

The aggregate annual runoff of Kazakhstan's rivers is approximately 104 cubic kilometers. Of this amount more than a half arises on the republic's area and the remainder comes from outside. At the same time, the republic transmits one-fifth of these resources to the area of the RSFSR, chiefly from the Irtysh, Ishim and Tobol Rivers. Last year fluvial discharge was 96 cubic kilometers, markedly below the norm.

All this accounts for the exceptional importance of a maximally conservative utilization of water resources and their strict protection against depletion

and contamination. As was stressed at the 15th Kazakh CP Congress, "the struggle for the purity of rivers and other water bodies should be energized."

Party and Soviet agencies as well as ministries and departments are working extensively in this direction. In recent years more than 250 water conservation structures with a combined capacity of 1.9 million cubic meters daily have been put into operation, along with 59 water recycling systems with a combined capacity of 2.6 million cubic meters daily, more than 460 kilometers of sewage systems and other facilities. During the 10th Five-Year Plan period alone and in 1981 more than 450 million rubles in capital outlays on the construction of water conservation structures alone was utilized. All this made it possible to improve somewhat the sanitary condition of open water bodies.

But it also has to be stated that the liquid wastes discharged by cities, settlements and enterprises include a growing amount of noxious substances in concentrations markedly exceeding the minimum permissible limits and the targets for the construction of water treatment plants are not being fulfilled. Of the nearly 400 water conservation facilities envisaged in the targets for the last 10 years, barely more than one-half have been put into operation, and the construction of more than 100 facilities has not yet even been commenced.

The situation in this respect is particularly unsatisfactory at enterprises of the ministries of: housing and communal services, nonferrous metallurgy, meat and dairy industry and light industry; and also at the Karaganda Synthetic Rubber Plant and the Karaganda Metallurgical Combine. The discharge of untreated or partially treated waters into water bodies is still being tolerated. Particularly alarming is the continuing practice of using potable water for industrial purposes, as for example at the Karaganda Cement Association, the Tselinograd Keramzit-Concrete Plant and the enterprises of the "Karagandaugol" Karaganda Coal Production Association. This is done not infrequently with the knowledge of the "Gorvodokanal" Municipal Water Mains Administration of the Ministry of Housing and Communal Facilities at the corresponding oblast centers. What is more, high-grade water from hundreds of Artesian wells is needlessly discharged on the surface in the Dzhambul, Alma-Ata, Chimkent and Aktyubinsk oblasts. Considerable areas of fertile land are ruined and underground potable water sources are being depleted.

This practice occurs because to a number of ministries, heads of enterprises, local soviets of people's deputies and organs of people's control the struggle to conserve water resources has still not become as important a part of daily work as the struggle to conserve metal, energy, building materials and other resources.

In strengthening the work to conserve and rationally utilize water resources in Kazakhstan with its vast arid steppe, semisteppe and desert zones that are extremely poor in water, more attention should be given to small rivers. After all a tiny rivulet flowing along the boundary of a steppe sovkhoz or worker settlement could become a recreational site and a major source of support for the development of industrial and agricultural production. But if improperly treated, it can turn into a sewage ditch. Unfortunately, the condition of most of the small rivers in the republic cannot be considered satisfactory. The culprits responsible for their silting up and depletion are most often the

enterprises and organizations under the jurisdiction of the Kazakh SSR Ministry of Agriculture. The use of river-bank areas as sites for pickling operations and the storage of toxic chemicals, the plowing of the river valleys nearly to the very edge of the rivers and the contamination of river beds with household garbage and the liquid wastes of livestock farms and machine repair shops have essentially become a universal practice.

Thus, for example, in Kokchetav Oblast, at the "Zlatogorskiy," "Vozvyshenskiy" and "Kutuzovskiy" sovkhozes and others, rivers are polluted with the liquid wastes of livestock farms. Such instances also are characteristic of many farms in the North Kazakhstan, Tselinograd, Turgay and other oblasts.

The Regulations Governing Protected Water Zones of Small Rivers in the Kazakh SSR, as approved by the competent organs, are primarily intended to eradicate such negative phenomena. They specify that protective zones and belts should be established on small rivers so as to prevent the contamination, pollution and depletion of the resources of these rivers. In the protected river-bank zones economic activities are severely curtailed.

But of course the implementation of these and other conservation measures in practice depends on rigorous monitoring by the state agencies especially established for this purpose, and particularly by the territorial river-basin inspectorates of the republic's Ministry of Land Reclamation and Water Resources. The principal tasks of these inspectorates are: the assurance of a rational utilization of water resources; their protection against pollution; state monitoring of the adherence to the established procedure for the utilization of water by enterprises, organizations, officials and citizens; and the identification of the sources and causes of the pollution of water facilities and other violations of water management laws as well as the adoption of counter-measures. So that they may implement effectively their control functions, the inspectorates are given broad rights, including even the right to shut down discrete industrial facilities, shops, enterprises and organizations in the event of crude violations of water management laws.

However, "punitive" measures of this kind are far from the main aspect of the activities of these inspectorates. A much more important and extensive activity in which they engage is the establishment of rigorous rules for the utilization and protection of water resources. In particular, a system for state monitoring of the utilization of water has been introduced; work is under way to issue special water use permits to enterprises, organizations and institutions; and numerous measures are being drafted and implemented to bring order into the distribution of water, enhance the effectiveness of water management systems, increase the efficiency of existing water treatment plants and build new plants of this kind, etc.

The state water management agencies operate with the constant support and attention of the Kazakh CP Central Committee and the republic's government. Special attention is paid to the implementation of measures to prevent the pollution of the basins of the Caspian Sea, the Ural and Irtysh rivers, the water



resources of Central Kazakhstan, the Kapchagay impounding reservoir, the basin of the Chu River in Dzhambul Oblast and other open water bodies.

Under the applicable regulations, the basin inspectorates operate in close contact with party and Soviet organs, organs of people's control and the public. Largely owing to precisely this interaction, the aggregate capacity of water treatment plants in this republic at present exceeds 4 million cubic meters daily. During the 10th Five-Year Plan period and the first 2 years of the current five-year plan period alone, hundreds of water-treatment facilities have been built or modernized in this republic, particularly the major artificial-biological sewage treatment plants in Alma-Ata (with a capacity of 560,000 cubic meters daily) and Ust'-Kamenogorsk and the mechanical sewage treatment facilities in Semipalatinsk. During the current five-year plan period biological sewage treatment facilities are scheduled to be opened in Ural'sk, Chimkent, Petropavlovsk, Kokchetav and other cities. All these measures have already made it possible, and will continue to do so in the future, to markedly improve the state of the republic's open and subterranean water bodies.

Further improvements in this work and a reliable protection of the purity and rational utilization of rivers, lakes and impounding reservoirs require even closer interaction of the basin inspectorates and sanitary monitoring organizations with party and Soviet organs as well as constant and effective assistance from the latter. But such assistance is far from always obtained. Consider this fact: in just one year, more than 1,160 fines totaling nearly 45,000 rubles were imposed on responsible officials and 18 industrial facilities shut down for discharging liquid wastes contaminated in excess of the permissible limits; the shut-down facilities included the Petropavlovsk Gelatin Plant, the vegetable storage plant No 6 of the central distribution base of the Alma-Ata "Plodoovoshchorg" [Fruit and Vegetable Trading Center], and others. And yet, as known, fines, let alone the shutdown of production, are extreme measures and before resorting to them the basin inspectorates issued repeated warnings and provided the concerned enterprises with guidelines for improving their waste treatment facilities and implementing other conservation measures and informed accordingly the party and Soviet organs in the concerned oblasts--fruitlessly, as it turned out.

What is more, instances occur in which local oblast authorities attempt to justify and protect river polluters, violators of water management laws, etc. Thus, 1 and 1/2 years ago, the East Kazakhstan basin inspectorate had, jointly with the oblast sanitary-epidemiological agency, ordered the shutdown of the Belousovskiy ore mine of the Irtysh Polymetal Combine, which had extensively polluted the Glubochanka River. This order (which was, incidentally, mandatory inasmuch as it was issued by a state agency) was not obeyed by the combine. The heads of the inspectorate turned to the oblast procuracy. But the order remained on paper and the violators of socialist legality essentially remained under protection.

Similar instances could be cited for Aktyubinsk Oblast. Following numerous warnings and demands to halt the pollution of the local aquifers, the Ileko-Embinskaya basin inspectorate for monitoring the utilization and conservation of

water resources and the oblast sanitary-epidemiological station issued a joint order for shutting down production at the Aktyubinsk Chromium Compounds Plant. But neither the city party committee nor the city ispolkom had supported this just decision. What is more, everything was done to have it nullified. In such a situation, the plant's management had, of course, felt undeservedly insulted. As a result, the order was not carried out.

Not infrequently, the oblast authorities, and especially the ispolkoms [executive committees] of the soviets of people's deputies, show lack of consistency in protecting water resources against pollution and depletion. Thus, e.g. the rivers of North Kazakhstan such as the Ishim, the Tobol, the Turgay and others, mainly flow through agricultural regions and become markedly polluted by rainfall and thawed snow from the areas of human settlements and animal farms. To prevent such pollution, the oblispolkoms, especially those in the Turgay, Kokchetav, North Kazakhstan and Tselinograd oblasts, have ordered the establishment of sanitary protection zones along these rivers and drafted a number of other measures. But they did not organize an effective monitoring of these measures. As a result, the rivers named above continue to be excessively polluted with nitrogen, petroleum products and other pollutants.

Of course, a substantial share of responsibility for this situation is borne by certain Union and republic ministries, in particular by the USSR Ministry of Fertilizers and the USSR Ministry of Chemical Industry as well as by the Kazakh SSR ministries of nonferrous metallurgy, agriculture and light industry. But one thinks that an energetic attitude of local party and Soviet authorities on this matter could help promote the purity and conservation of water resources.

Besides, this is not just a matter of good intentions by the water conservation authorities but a requirement stated in party documents. The decisions of the leading organs specify as a most important task for oblast party committees, oblispolkoms and ministries and departments the expansion of the construction of water conservation facilities and the introduction of recycled water supply systems as well as of other progressive production technologies for the purpose of markedly reducing the discharge of untreated liquid wastes.

An important potential for enhancing water conservation is also harbored in increased monitoring by the oblispolkoms over the effective utilization of the capital outlays allotted for the construction of water conservation facilities; the development and implementation on an urgent basis of the necessary organizational and technical measures to maximally reduce the volume of liquid wastes discharged by enterprises and their content of pollutants; and lastly in improving the technical conditions and streamlining the operation of the existing water treatment facilities so that they would meet the established requirements.

The republic's Gosplan, ministries and departments should make their contribution to protecting the purity of water resources. In this respect what matters most is that the principal water conservation measures be incorporated in the 5-year and yearly plans of enterprises and ministries and the funds allotted to this end be utilized rigorously according to purpose. It is precisely owing to the lack of efficient planning of this work that it often happens that plants and factories,

e.g., the Turkestan Structural Products and Components Combine of the Glavrissovkhozstroy [Main Rice Sovkhoz Construction Administration] fail to install water-measuring instruments, lack a plan for water-conservation measures and norms for the consumption and diversion of water per output unit and are not monitoring the discharge of their liquid wastes.

As known, the (1978) decree of the CPSU Central Committee and the USSR Council of Ministers "On Additional Measures to Strengthen Natural Conservation and Improve the Utilization of Natural Resources" regards it as expedient and mandatory to take into account the fulfillment of plans and measures for natural conservation and the adherence to norms and rules for the utilization of natural resources when assessing the results of socialist competition at enterprises and organizations. This requirement is often not followed, which results in reducing the personal responsibility of economic administrators--from ministers to enterprise directors--for the prompt construction and effective operation of water treatment facilities.

Resolute steps should be taken to overcome the still persisting and fundamentally mistaken attitude toward rivers, lakes and impounding reservoirs as inexhaustible sources from which water can be simply taken without attending to the purification of liquid wastes. A most rigorous conservation and thrifty utilization of water resources as well as proprietary concern for their purity are at present not just ecological tasks but tasks of a great economic and social significance. The implementation of these tasks will greatly affect the further development of industry, construction, agriculture and public utilities as well as the growth of national welfare.

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